THE IRON TRADE REVIEW

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Record Breaking Production of Steel Corporation

With Some Independents Fully as Busy—Increased Firmness in Pig Iron—Slight Decrease in Buying

Politics, while perhaps responsible for some distraction is business affairs, has not had the slightest effect upon the most important activities. Heavy specifying against contracts and great production by blast furnaces and mills proceed unabated. The slight lull in buying is not unwelcome to the manufacturers, who expect to obtain higher prices later in the year. Inquiries for export are more numerous, owing to the continuance of prosperous conditions in England and Germany. Foreign business is understood to be going at good prices.

Corporation Output

The tremendous activity of the United States Steel Corporation is enabling it to break all its records for production of pig iron and steel. Pig iron output by the Corporation in May, it is announced, established a new high record in its history and exceeded any other month by about 25,000 tons. The total iron output was between 1,250,000 and 1,275,000 tons. In steel ingot production, the May figures of the leading steel interest were about 1,000 tons less than the high monthly record established in March, 1910, when 1,487,000 tons were turned out by the open-hearth and Bessemer plants. At the present rate, the Corporation is manufacturing pig iron on the basis of over 15,000,000 tons per year and steel ingots at over 17,500,000 tons a year. At this rate, it bids fair to shatter the high record of 1910, when 11,800,000 tons of pig iron and 14,100,000 tons of ingots came from the blast furnaces and steel works. At the present time, the Corporation is operating between 94 and 95 per cent of ingot capacity, at which point it has been maintaining its activities for a number of weeks. Its open-hearth furnaces are now running at practically 100 per cent and though there is some idle Bessemer capacity, principally at the Edgar Thomson works of the Carnegie Steel Co., some of the works of this type are little behind the general average of operations. The Bessemer capacity of the Illinois Steel Co. is running practically full.

Independent Activity

Independent steel plants are not far behind the Steel Corporation in activity, but eastern mills are not so active as those in the central west. The greatest activity is in the Chicago district. Even in the east, deliveries are not being made so promptly. Two important manufacturers of structural material in that section are not promising to deliver standard sections in less than from four to six weeks. Some eastern mills, apparently expecting higher prices to prevail later, are extremely conservative about booking orders for the remainder of the year on plates, shapes and bars. There seems little doubt, however, that on an attractive order, 1.20c, Pittsburgh, on shapes, may still be done in the Philadelphia market. The demand for open-hearth steel continues very strong. The Cambria Steel Co. has had much difficulty in meeting the demands of its customers for the open-hearth product and will add three furnaces to its capacity. The resumption of steel making by the duplex process by the Bethlehem Steel Co., by which the iron is first blown in the Bessemer converter and the process completed in the open-hearth furnace, is an interesting development. It marks the withdrawal of the company as an active seller of pig iron, on account of the increased use of pig iron in the duplex process.

Pig Iron

Stocks of pig iron continue to decline and in the district which includes Pittsburgh and Ohio the tonnage on hand is about 560,000 of steel making and foundry grades. Furnace men who are still in need of ore find that the extremely low quotations made at the opening of the ore selling season are not now prevailing and are citing this fact as a reason for advancing pig iron quotations. The ore yet to be sold, however, is a very small percentage of the tonnage that will be consumed this year. In the Pittsburgh district, there is a tendency toward higher pig iron prices, except on Bessemer and the $13 quotation on basic has disappeared. A sale of from 6,000 to 7,000 tons of basic for last half delivery was made at $13.25, valley. It was followed by sales of smaller tonnages at $13.50. Prices in the Ironton district are not so unsteady and there is greater firmness on Alabama irons. New Jersey foundries have been buying actively. A large special machinery manufacturer in that section purchased about 7,500 tons additional.

Structural Material

Prices for fabricating structural material are stronger by several dollars per ton in the eastern market. The McClintic-Marshall Construction Co. has taken the contract for 7,000 tons for the East End Savings & Trust Co. building, Pittsburgh. The American Bridge Co. will, in all probability, furnish 3,500 tons for the Fairmount hotel, and 7,000 tons for an addition to the Curtis Publishing Co. plant, both in Philadelphia.

PITTSBURGH

Pig Iron Prices Stronger

Office of THE IRON TRADE REVIEW,
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There is a gradual upward movement in the price of pig iron that has become more definite the past week, after some weeks of hesitancy, and the general scarcity of stocks carried by furnaces, with increased cost of coke and higher prices of ore, are having an influence in bringing out more active buying. Raw steel is scarce and firm. Finished lines are, with few exceptions, sold ahead through the third quarter, notably plates and shapes, sheets and tin plate. There is talk of an advance in merchant bars and plates after July 1. Structural steel is making the most notable progress toward a more satisfactory price level. Scarcity of labor is becoming acute and mills are complaining of an absence of sufficient crews to man all needed capacity. Steel pipe and boiler tubes represent the most active feature of current new business in the iron and steel market.

Pig Iron.—Sales of basic iron during the past week, while comparatively limited, displayed an utter absence of any $13 iron, and the claims of furnaces that this low priced iron has been eliminated from the market seem fully established. The surprising feature is the extreme scarcity of this grade of iron for either prompt shipment or for the third quarter. A sale of 1,500 tons for the third quarter at $13.25, valley, was reported. Another order is reported to have been closed calling for between 6,000 and 7,000 tons for the last half at $13.25, while sales of smaller lots to Pittsburgh consumers have been closed at $13.50, valley, and $14.40, Pittsburgh. The Bessemer iron market is extremely quiet, and confined to carload lots for prompt shipment. No. 2 foundry is showing increasing strength, and while some buying was done at $13.25 for a large tonnage last week, it has firmed up to $13.50 and better on small lots, this week one furnace holding for $13.75 for the last half. Malleable iron is also stronger, following closely on No. 2 foundry as to price, one sale being closed last week of 1,200 tons at $13.25, but the seller withdrew immediately from quoting any further tonnage at that price. Gray forge is stronger at $13, and small sales are going at $13.25. Furnace men are pointing to the fact that there is no more low priced ore possible this year. Ore companies have all stiffened on their price, and with the high price of coke, there is bound to come a better value for pig iron, if there are stacks that remain active. We quote the market as follows:

(Prompt Shipment.)

Bessemer, valley	$14.25
Bessemer, Pittsburgh	15.15
Basic, valley	13.25
Basic, Pittsburgh	14.15
No. 2 foundry, Pittsburgh	14.15
Gray forge, Pittsburgh	13.90
Malleable, Pittsburgh	14.15

(Third Quarter.)

Bessemer, valley	$14.25
Bessemer, Pittsburgh	15.15
Basic, Pittsburgh	14.40
No. 2 foundry, Pittsburgh	14.40
Gray forge, Pittsburgh	13.90
Malleable, Pittsburgh	14.40

Ferro-Alloys. — The demand for ferro-alloys is very limited. Ferro-manganese is extremely scarce, but the buying is also light, and sales are confined to less than carload lots. Small tonnages are bringing from $55 to $58, Baltimore. Quotations for shipments beyond July 1 are from $53 to $55, Baltimore, while a few contracts are being taken for the first half of 1913 at $48.50. Most dealers in manganese are not accepting new business for prompt shipment or for last half without referring the same to producers for acceptance. The market for 50 per cent ferro-silicon is also quiet, but prices are firm. Domestic grades are unchanged.

We quote ferro-manganese at $48.50, Baltimore, and $55 to $58 for prompt delivery. The freight rate from Baltimore to Pittsburgh is $1.95 per ton.

Fifty per cent ferro-silicon is quoted nominally at $70, Pittsburgh, for prompt and forward delivery; 12 per cent, $22; 11 per cent, $21; 10 per cent, $20, f. o. b. Globe, Jisco and Ashland furnaces. The freight rate to Pittsburgh is $1.90. The foreign grades are held at $1 or more a ton over domestic prices.

Plates. — The demand for plates continues at about the same rate of a week ago, and manufacturers are reporting no gain on their orders so as to reduce unfilled bookings. An interesting situation has arisen through the crowding of the western mills of the Steel Corporation, which has caused an overflow of tonnage from that point into the Pittsburgh territory. This has given a further impetus to operations. The most important purchase of plates during the past week has resulted from the order of the Illinois Central railroad for 2,500 steel gondola cars, of which 750 were given to the Pressed Steel Car Co. and a like number to the Standard Steel Car Co., and the American Car & Foundry Co. was awarded the other 1,000. Inquiries for cars are still coming out, and considerable interest is shown in the prospective placing of extensive orders of the Canadian Pacific and the Grand Trunk Railroads of Canada, the latter having asked for estimates on 5,000 freight cars of various types. The Southern Railway Co. is in the market for a round lot of equipment. Most of the ship yards along the Atlantic coast are fully occupied, and are specifying liberally against plate contracts. There is considerable talk of an advance in plates, but no action has been taken and none is likely until after July 1.

Tank plates, ¼ inch thick, 6¼ to 100 inches, 1.25c. Extras are as follows per 100 pounds: Boiler and flange steel plates, 0.10c; A. B. M. and ordinary firebox steel plates, 0.20c; still bottom steel, 0.30c; marine steel, 0.40c; locomotive firebox steel, 0.50c; all sketches excepting straight taper plates varying not more than 4 inches in width at ends, narrowest end being not less than 30 inches 0.10c; circles, 0.20c. Plates in widths over 100 inches up to 110 inches 0.05c over 110 inches up to 115 inches, 0.10c; over 115 inches up to 120 inches, 0.15c; over 120 inches up to 125 inches, 0.25c; over 125 inches up to 130 inches, 0.50c; over 130 inches, 1c. Gages under ¼ inch to and including $\frac{3}{16}$-inch plate on thin edge, 0.10c; under $\frac{3}{16}$ and including No. 9, 0.25c. Five cents extra for less than carloads. Terms net cash in 30 days.

Sheets.—The demand for sheets on new orders is very satisfactory, the volume of buying being slightly above normal for this season, and prices in the immediate Pittsburgh district are very firm. There are some makers in the middle west who are accepting business for prompt shipment at 1.90c for No. 28 gage black sheets and 2.90c to 2.95c for galvanized sheets of the same gage. These makers, however, are not filled up on tonnage and are maintaining the organization of mill crews at a sacrifice of prices over a period of quietness for large tonnages. Most of them report excellent bookings for the last half and are firm at the market price covering the last six months of the year. The stiffening in the prices of raw material to sheet makers covering last half contracts,

it is believed, will further strengthen the market.

We quote the market as follows:

Flat Sheets

Black Sheets.—Nos. 10-12, $1.60 per 100 pounds; Nos. 13-14, $1.65; Nos. 15-16, $1.70; Nos. 17-21, $1.75; Nos. 22-24, $1.70 to $1.80; Nos. 25-26, $1.75 to $1.85; No. 27, $1.90; No. 28, $1.95; No. 29, $2.00; No. 30, $2.10.

Blue Annealed.—Nos. 3-8, $1.35 per 100 pounds; Nos. 9-10, $1.40; Nos. 11-12, $1.45; Nos. 13-14, $1.50; Nos. 15-16, $1.60.

Galvanized.—Nos. 10-11, $2.00 per 100 pounds; Nos. 12-14, $2.10; Nos. 15-16, $2.25; Nos. 17-21, $2.40; Nos. 22-24, $2.50; Nos. 25-26, $2.70; No. 27, $2.85; No. 28, $3.00; No. 29, $3.10; No. 30, $3.30.

Roofing Sheets

Galvanized.

Net extras on all gages per 100 pounds. Corrugated 2-inch, 2½-inch, 3-inch and 5-inch corrugation, 5c; 2 V crimped without sticks, 5c; corrugated 1¼-inch corrugation, 10c, 3 V crimped without sticks, 10c; pressed standing seam with cleats, 15c; plain roll roofing with cleats, 15c.

Painted Roofing.

12 to 18 gage, inc., 5c; 19 to 24 gage, inc., 10c; 25 to 28 gage inc., 15c.

Tin Plate.—Most of the large consumers of tin plate have specified for their requirements through the third quarter and well into the fourth quarter, and makers are now operating to capacity and are behind on deliveries. Current new business is large for the season, and prices are very firm on the basis of $3.40 for prompt shipment and $3.50 for the last half. We quote the market as follows:

Coke tin plate, 100-pound basis, 14 x 20, $3.40 to $3.50, f. o. b. mill, Pittsburgh district.

Rails and Track Material.—Small orders mostly supplemental to earlier contracts for standard section rails predominate in the rail trade at this time, but these aggregate a very satisfactory tonnage, and the leading interest reports shipments for June as fully equal to those of May with the open-hearth sections in the lead. The closing weeks of the first half and the two opening weeks of the second half of the year are usually the quiet ones in the steel trade, and a period of repairing and stock taking interferes with activity more or less, but at the present time this has made no perceptible change in the activities of the mills. There is much negotiating for large rail tonnages for the latter part of the year's requirements, and prospects of a large buying movement seem to brighten. The rail trade is in better form than at any time since prices were advanced, and the volume of business is greater. Track material is firm and in good demand. The market is quoted as follows, with the base price on open-hearth steel rails 1.34c per pound at the mill:

Fifty-pound and heavier, 1.25c per pound; carloads and less than 500 tons, 1.34c per pound; light rails on base weight of 40 to 45 pounds, 1.15c, the schedule on the other weights being irregular and subject to negotiations; angle bars for standard sections, 1.50c, Pittsburgh; track bolts, 2.20c to 2.25c, Pittsburgh.

Railroad Spikes

4½, 5 and 5½ and 9-16	$1.45
3, 3½, 4, 4½ and 5 x ½	.10
3½, 4 and 4½ x ⅞	.20
3, 3½, 4 and 4½ x ⅜	.30
2½ x ⅜	.40
2½, 3 and 3½ x ⅞	.60
2 x 5-16	.80

Steel.—A large number of consumers of rolling billets and sheet bars, who have been accustomed to the open-hearth product, have found it so difficult to get reasonably prompt deliveries that they have turned to Bessemer steel of late and are specifying quite liberally on the latter grade of steel. As a result, both Bessemer and open-hearth have shown an equal firmness for third quarter and last half business. A good volume of tonnage is involved in the buying and prices show much firmness. Bessemer billets and sheet bars, however, are quoted for spot shipment at a shade below open-hearth steel, billets being quoted at $21.50 to $22.50, mill, Youngstown and Pittsburgh, and sheet bars at $22 to $22.50, while open-hearth is quoted $22 to $23 for both billets and sheet bars. Some sales of forging billets in small lots are reported at $27, Pittsburgh, by independent producers, although the leading interest is maintaining $28, Pittsburgh, temporarily, and is practically out of the market for any semi-finished steel covering the third quarter. We quote the market as follows:

Bessemer 4 x 4 billets with 0.25 carbon and less are quoted at $21.50 to $22.50, with the usual extra for size and analysis, and open-hearth rolling billets, $22.00 to $23.00. Bessemer sheet and tin bars are quoted at $22.00 to $22.50, and open-hearth sheet bars are quoted at $22.00 to $23.00, f. o. b. Pittsburgh, for second quarter, with full freight to destination added. Forging billets are quoted at $27.00 to $28.00, Pittsburgh.

Hoops and Bands.—There is little change in the demand for steel hoops and bands. Specifying by consumers is on a liberal scale, and mills are operating freely with a fair tonnage ahead for some time and are able to make shipments with reasonable promptness. Prices are unchanged, the market seeming to be firmly fixed on 1.25c to 1.30c on hoops and 1.20c on bands, although both prices are considered below normal when compared with other finished lines. We quote the market as follows:

Hoops in carload lots, 1.25c to 1.30c, Pittsburgh; in less than carload lots, 1.40c; bands 1.20c, base, with net extras, as per standard steel.

Merchant Bars.—There is a good demand for merchant bars. New buying at the market price of 1.20c, Pittsburgh, is above normal for the present season, and in view of so many large consumers having covered for some months ahead. Agricultural bars are being taken in large volume by consumers who are specifying liberally. New business is particularly active in line of reinforced concrete bars, which are becoming more important as a factor in the bar trade each year. Some of the large independent bar makers are so far ahead on tonnage booked and behind on deliveries that a premium of $1 a ton is reported for prompt shipment tonnage. Steel shafting is in better demand than for some time. The price for less than car load lots has stiffened along with larger tonnages, and the discount is now 60 per cent even, makers no longer granting the extra "five" or "double five" on quotations. Iron bars are firm and in good demand, and while there is still business being taken on attractive tonnages at 1.30c, the market is more nearly 1.35c, Pittsburgh.

We quote the market as follows:

Common iron bars, 1.30c to 1.35c, Pittsburgh; Bessemer and open-hearth steel bars, 1.20c; plow and cultivator, 1.25c; channels, angles, zees, tees, under 3 inch, 1.25c, all f. o. b. mill. The following differentials are maintained on steel: Less than 2,000 pounds of a size, 0.35 advance. Cold rolled, and ground shafting, 65 per cent off in carloads and 60 per cent in less than carloads, delivered in base territory.

Muck Bar.—Some large buying of muck bar is noted during the past week, and prices are still being firmly held with the eastern market more active than in the middle west. Most makers of muck bar are increasing production and report very small stocks available for prompt shipment.

We quote $29 to $30, Pittsburgh, for muck bar.

Structural.—There is a better inquiry for structural material, and fabricators are quoting more on large lots, while the bookings taken during the past week have been sufficient to fill up the large shops for the next 30 to 60 days. Some of the larger fabricators, who a few weeks ago complained of an over capacity for structural work, are now expressing a desire for even greater capacity. Among the bookings of the past few days is one for a highway bridge at Altoona awarded to the Penn Bridge Co. with the plain material to Pittsburgh makers. The McClintic-Marshall Construction Co. also booked the material for the East End Savings & Trust Co. building in Pittsburgh, for a 15-story office building requiring about 7,000 tons. The National Iron & Wire Co. secured a con-

tract for 900 tons of material for the Cleveland Foundry Co.'s plant. A large number of small orders which aggregate a very fair tonnage have also been booked. Plain material prices are being more firmly maintained, and low priced contracts terminating at the end of this month will make a much firmer market.

We quote the market as follows:

Beams and channels, 15 inches and under, zees, 1.25c; tees, 1.25c; angles, from 3 to 6 inches, 1.25c; over 6 inches, 1.35c; universal and sheared, 1.30c; over 15 inches, 1.35c; plates, 6¼ inches wide and wider, 1.35c.

Merchant Pipe. — Pipe makers are so well sold up that they are going slow in taking new business, and buyers are finding it difficult in placing large contracts so as to obtain satisfactory shipments. While there is a large volume of new buying pending based on present inquiries, there is also much business distributed during the past week; 50 miles of small sized steel line pipe placed by a Pittsburgh buyer with local independent mills, and other line pipe orders finally placed include 15 miles of 6-inch, six miles of 12-inch and three miles of 3-inch for Ohio delivery. Another buyer has placed 10 miles of 2-inch gas line, five miles of 3-inch tubing and casing. Some three miles of casing and tubing were also placed for oil well fields, all for Ohio delivery. Merchant pipe jobbers are increasing their specifications, and are lining up stocks for the summer trade. Shortage of labor is becoming keenly felt among the pipe mills of the Pittsburgh territory. The high price of common labor is attracting mill labor to the outdoors, and is mainly responsible for the defection among the workmen who are attracted by the temporary high rates of pay on public contracts, the leading interest having experienced trouble at one of its plants, which has embarrassed operations for a short time this week. Several of the makers are unable to operate all of their furnaces because of a lack of crews. We quote the official discount to jobbers subject to the usual preferential discount to the larger buyer as follows:

Iron and Steel Pipe Basing Prices.

	Steel.		Iron.	
	Butt weld.			
	Black.	Galv.	Black.	Galv.
⅛, ¼ inch	73	53	68	48
⅜ inch	74	64	69	53
½ inch	77	67	72	59
¾ to 1½ inch	80	72	75	64
2 to 3 inches	81	74	76	65
	Lap weld.			
2 inches	78	71	72	63
2½ to 4 inches	80	73	74	66
4½ to 6 inches	79	71	73	65
7 to 12 inches	78	68	71	61
13 to 15 inches	55	..	47	..
Extra Strong, Plain Ends.				
			Butt weld.	
⅜, ¾, ⅛ inch	69	59	65	55
½ inch	74	68	70	63
¾ to 1½ inch	78	72	74	65
2 to 3 inches	79	73	75	66
Extra Strong, Plain Ends.				
			Lap weld.	
2 inches	75	69	71	63
2½ to 4 inches	77	71	74	66
4½ to 6 inches	76	70	72	65
7 to 8 inches	70	60	65	55
9 to 12 inches	65	55	60	50
Double Extra Strong, Plain Ends.				
			Butt weld.	
½ inch	64	58	60	52
¾ to 1½ inch	67	61	63	55
2 to 3 inches	69	63	65	57
Double Extra Strong, Plain Ends.				
			Lap weld.	
2 inches	65	59	61	52
2½ to 4 inches	67	61	63	57
4½ to 6 inches	66	60	62	56
7 to 8 inches	60	50	55	45

Plugged and reamed pipe is furnished at 2 points higher price, either butt or lap weld.

The above discounts are for full weight pipe, subject to a variation of 5 per cent, merchant pipe, when specified, being furnished up to 6 inches at one point higher discount (lower price).

Boiler Tubes.—Better specifications are coming out from week to week on boiler tubes. Most of the makers are asking from seven to eight weeks on shipments, and this period is being slowly extended owing to the enlarged demand and the increasing movement of buyers for larger specifications. New business is coming out very freely, and prices are extremely firm. We quote the official discounts on steel and charcoal iron boiler tubes as follows:

	Steel.	Iron.
1½ inch	60	48
1¾ to 2¼ inch	64	50
2½ inch	66⅔	55
2¾ to 3¼ inch	71½	57½
3½ to 4½ inch	74	60
5 and 6 inch	66⅔	..
7 to 13 inch	64	..

To destination east of Mississisppi river will be sold at delivered discount for carloads lowered by 2 points, for lengths 22 feet and under; longer lengths, f. o. b. Pittsburgh. Usual extras to jobbers and boiler manufacturers.

Wire Products. — The market for wire and wire nails continues to show softness for prompt shipment, and some makers are not so firm in insisting on the full price for the third quarter. The market is being shaded about 5 cents on both nails and plain wire, business having been booked at $1.35 for plain wire and $1.55 for nails for prompt shipment by some of the makers whose capacity is still unsatisfied. The leading interest and a number of older and larger manufacturers, however, are well booked ahead on orders, and are not accepting new business at lower than the market price of $1.60 for nails and $1.40 for plain wire. We quote the market as follows:

Wire nails, jobbers, carload lots $1.55 to $1.60; retailers' carload lots, $1.60 to $1.65; cut nails (western makers), jobbers' carload lots, $1.55 to $1.60, painted barb wire, jobbers' carload lots, $1.60; retailers' carload lots, $1.65 with 30c for galvanizing; plain wire to jobbers in carloads, $1.40; and to dealers, in carloads, $1.45; polished staples, $1.60; galvanized staples, $1.90.

Wire Rods.—The situation in wire rods is still unsatisfactory and new business is being taken at 50 cents below that of a week ago, practically reverting to the earlier prices of the year of $25 to $26, according to the attractiveness of the business offered. Consumption of wire rods, while heavy, and in some cases better than the capacity of the wire makers' mills, is not sufficient to employ all producers, and has made the softening tendency more pronounced.

We quote $25 to $26 for Bessemer and open-hearth wire rods.

Coke.—The week past has been one of negotiation and interchange of views between coke and furnace operators respecting last half furnace coke contracts. Contracts for the last half, if placed, however, have been done without becoming known, and there is evidently a determined purpose to keep back this information for the time being by both the buyers and sellers. It is estimated that between 75,000 and 100,000 tons per month of contract coke have been closed for the last half at $2.50. Approximately 25,000 tons per month have been closed at from $2.25 to $2.35. The spot market has been restricted in volume. Production has been steadily lowered, and spot coke at the opening of the week has declined to the smallest tonnage in some months, railroad operators saying that the coke on track was practically nil on Tuesday morning. The total sales for the past week in spot coke for furnace use have not exceeded 8,000 tons. These varied from $2.05 to $2.30. Sales were closed this week in lots of 40 and 50 cars at $2.20 and $2.25, the last sale being reported of 50 cars at $2.25. Coke operators commencing next week will ship ahead on contracts for the first week in July to provide for the holiday suspension which usually extends through that week, and this may absorb much spot coke. After a brief spurt in production for the week ending June 8, curtailment again became pronounced, in the Connellsville region. Ovens suffering both from a shortage of labor and from the effects of the heavy rainstorms and washouts are slowing down. The Connellsville *Courier* for the week ending June 8 reports 31,422 ovens active with a production of 398,656 tons, as compared with 31,489 ovens active and a production of 379,121 tons for the prior week, the gain for the week ending June 8 amounting to about 19,000 tons and raising the total nearer to 400,000 tons than for some weeks. We quote standard Connellsville furnace coke for spot shipment

from $2.15 to $2.30, according to grade, and on contract from $2.25 to $2.50, ovens. For standard Connellsville foundry coke, we quote $2.50 to $2.75, ovens, for spot shipment, and on contract from $2.60 to $2.75, ovens.

Old Material.—The market for old material has been very quiet during the past week. There has been some buying by consumers direct from producers of scrap, thus eliminating the dealer, but the tonnages secured in this way have not generally been large. The transactions were confined to heavy melting steel, and prices have ranged from $13.40 to $13.50 in these deals. The dealers are quoting $13.50 as a minimum, and those with stocks accumulated are holding them at this price or better. There was a slight weakness noted in borings and turnings, a lot of 1,000 tons being closed at 25 cents off the market quotation. Some of the large consumers are buying from hand-to-mouth, and are disposed to wait until after the middle of July before placing any important contracts for scrap material. Other grades of scrap are steady but unchanged. The dealers are active in gathering material and the market looks rather bare for prompt shipment, outside of the hands of the regular trade. On the other hand, consumers appear to be covered for immediate wants, and at this season are not inclined to anticipate requirements very far ahead. We quote gross tons delivered in the Pittsburgh district including Monessen, Steubenville, Brackenridge and Follansbee, as follows:

Heavy melting scrap	$13.25 to 13.50
Rerolling rails	14.00 to 14.50
Malleable	12.75 to 13.00
Bundled, sheet scrap	12.00 to 12.25
Iron axles	22.00 to 22.50
Old iron rails	15.00 to 15.50
Stove plate	9.00 to 9.50
No. 1 wrought scrap	13.50 to 14.00
Old car wheels	14.25 to 14.50
Low phosphorus	15.75 to 16.00
Machine shop turnings	10.50 to 10.75
Cast borings	9.75 to 10.25
No. 1 cast scrap	12.50 to 12.75

CHICAGO

Railroad Buying Active---Pig Iron More Active

Office of THE IRON TRADE REVIEW, 1328 Monadnock Blk., June 18.

The principal features of interest during the week were a continuation of buying on the part of railroads and a slight betterment in the pig iron situation. Manufacturers of plates and shapes are unable to bring about any improvement in their crowded condition and specifications for prompt delivery continue at an increasingly high rate. One producer reports a total tonnage of specifications for the first two weeks of June nearly equal to that of the entire month of May. While the total structural tonnage of the week is small, a number of large contracts are pending and fabricators report contract prices that are more in harmony with the quotations on structural material.

Pig Iron.—There is evidence of increased activity in the pig iron market and while comparatively quiet, a greater number of sales are reported than have been made for some weeks. It is the consensus of opinion that there has been much quiet buying and conditions indicate that many melters are not as well covered for early requirements as has been thought. There has been little buying for last quarter requirements, the sales made being rather for prompt shipment or last half delivery. Sales in lots of 500, 300 and 200 tons of southern foundry have been made to Rock Island and Moline manufacturers and another sale for 1,000 tons of the same material is reported to a melter in the same locality. There is an inquiry from a southern Illinois melter for 2,000 tons of southern iron in the market and two other small inquiries of like nature for 300 tons each. Due to the lack of buying heretofore, a buying movement is expected in the near future and an early advance on southern foundry No. 2, to $11.50, Birmingham, is predicted. The market for northern iron continues quiet, but inquiries are fair and some for very good tonnage.

The following prices represent the market for Chicago delivery, except Northern foundry and malleable Bessemer, which are quoted, f. o. b. local furnace:

	Third quarter.	Last half.
Lake Superior charcoal	$15.75	15.75
Northern foundry No. 2	14.50	14.50
Southern foundry No. 2	15.35	15.85
Southern silv'ries, 5 per cent sil.	16.10	16.35
Jackson co. silveries, 8 per cent	17.90	17.90
Malleable Bessemer	14.50	14.50
Alabama basic	15.35	15.60

Billets.—The market is very firm and is characterized by a continued scarcity of billets. There is no indication of an improvement in the crowded condition of the mills, no producers being able to take new business in any appreciable quantity. We quote, open-hearth forging billets, $28, Chicago; re-rolling billets, $24.50.

Merchant Bars.—The market for merchant bars shows an increased firmness and a tendency toward higher quotations that is daily becoming more marked. Iron bars are sold at 1.25c and few producers, owing to the crowded condition of their plants, are able to take business at that figure. The controlling feature of the general steel situation is the inability of the mills to take business for delivery earlier than the last quarter, prices being very firm on a basis of 1.20c, Pittsburgh. No further increase in the price of shafting is evident, the market remaining firm, however, at 65 per cent off list for carloads and 60 per cent for less than carloads. Store prices continue very firm, consistent with the heavy demand for material out of stock.

We quote, f. o. b. Chicago, as follows:

Bar iron, 1.25c; hard steel bars, rerolled, 1.25c to 1.30c; soft steel bars, bands and small shapes, 1.38c base; hoops, 1.48c; smooth finished machinery steel, 1 inch and larger, 1.78c; shafting 65 per cent off list for carload lots, 62 per cent off for less than carloads.

On iron and steel from local stock, we quote as follows:

Bar iron, 1.50c to 1.60c per pound base; soft steel bars, 1.60c to 1.65c per pound base; soft steel hoops, 1.80c to 1.90c, full extras.

Structural Material.—While there is considerable new business pending, there has been a comparatively small amount taken in the past week and the total tonnage on contracts let is very light. The railroads are buying heavily in structural material and it is reported that this condition is likely to continue for some time. The situation is a little more satisfactory to the fabricators, recent prices being more in harmony with the quotations

on structural material. The total tonnage for the week amounts to but 1,955 tons, of which the leading interest has taken 375 tons for the Mill street viaduct at Kansas City, Kan. The largest contract of the week was taken by the Pacific Rolling Mill Co., and consisted of 1,000 tons from the state board of harbor commissioners, California, for piers Nos. 30 and 32, at San Francisco. A contract involving 157 tons has been let by the Pelligren Construction Co., St. Louis, to Christopher & Simpson, for a store and office building and the Modern Steel Structural Co. has taken 253 tons from the village of Hibbing, Minn., for an addition to the Lincoln high school building at that place. The Chicago, Milwaukee & St. Paul has ordered 1,000 tons of bridge material.

We quote, mill prices, f. o. b. Chicago, as follows:

Beams and channels, 15 inch and under, 1.43c. For extras, see Pittsburgh report.

Store prices are as follows:

All angles, 3 inches and larger, including 6 inches, $1.70 to $1.75 per 100 pounds; angles over 6 inches, $1.75 to $1.80 per 100 pounds, base; beams, 3 to 15 inches, inclusive, $1.70 per 100 pounds, base; channels, 3 inches and larger, $1.70 per 100 pounds, base.

Rails and Track Fastenings.—While the market is generally quiet, owing to the crowded condition of all producing plants and their inability to make deliveries, a large amount of new business is being offered by the railroads, which have developed into important factors in the situation. The Grand Trunk Pacific has ordered 10,000 tons of rails and 15,000 tons have been ordered by the Chicago, Milwaukee & St. Paul.

We quote, light rails, f. o. b. Chicago, and track fastenings, f. o. b. Joliet, as follows:

Light rails, carloads, 25 to 45-pound, 1.20c to 1.25c; 16 to 20-pound, 1.25c to 1.30c; 12-pound, 1.30c to 1.35c; 8-pound, 1.35c to 1.40c.

Light section relayers, 45 pounds and under, subject to inspection, $21 to $23; standard section relaying rails, subject to inspection, $23.50 to $24.

Track fastenings, f. o. b. Joliet, angle bars, 1.50c; railroad spikes, 1.55c to 1.60c, smaller size spikes, 1.65c, base; track bolts with square nuts, 1.95c to 2.05c base.

Plates.—Heavy buying on the part of the railroads and continued and increased activity in car building has resulted in a general stiffening of prices and a marked tendency toward higher quotations. Railroad buying in this territory has reached a point that has not been equaled for some time and indications are toward increased activity. With the capacity of the mills taxed until the middle of last quarter and evidences of increased buying in the near future, an early advance in quotations seems inevitable. The Cold Blast Transportation Co., Chicago, is in the market for 350 refrigerator cars and the Canadian Northern is said to be in the market for freight cars. The latter item, however, has not been confirmed. The Chicago & Alton is in the market for nine refrigerator cars, 26 box cars, four stock cars, 26 automobile cars, three furniture cars and five flat cars. The Illinois Central has ordered 2,500 steel gondola cars in the following allotments: 1,000 from the American Car & Foundry Co.; 750 from the Standard Steel Car Co., and 750 from the Pressed Steel Car Co.

We quote, f. o. b. Chicago, as follows:

Tank plates, ¼ inch thick, 6⅝ to 100 inches wide, 1.43c. For extras, see Pittsburgh report.

Store prices are as follows:

Tank steel, ¼ inch and heavier, up to 72 inches wide, $1.70.

Sheets.—The market reflects the general situation in increased firmness and a marked upward tendency emphasized by the prospective business offered by continued car buying.

We quote, f. o. b. Chicago, as follows:

Blue annealed, No. 10, 2.00c; No. 12, 2.05c. Box annealed, No. 28, 2.35c. Galvanized, No. 28, 3.45c.

For mill prices, see Pittsburgh report. Freight to Chicago, 18 cents.

Wire Products.—Prices on wire products continue firm on a basis of 1.60c, Pittsburgh, and the movement of agricultural wire shows no decrease. With a continuation of favorable reports from agricultural districts, a continued increase in business may be expected.

We quote, f. o. b. Chicago, as follows:

Wire nails, jobbers' carload lots, $1.78; retailers' carload lots, $1.88; retailers' less than carload lots, $1.98; painted barb wire, jobbers' carload lots, $1.78; retailers' carload lots, $1.88; retailers' less than carload lots, $1.98, with 30c for galvanizing; plain wire, jobbers' carload lots, $1.58; retailers' carload lots, $1.63.

Merchant Pipe and Tubes.—The recent raise in the price of pipe and tubing is justified by continued activity, buying being maintained at the same rate, in spite of the advance and the difficulty in placing business for early delivery.

We quote, store prices, on merchant pipe and tubes, f. o. b. Chicago, as follows:

Iron and Steel Pipe Basing Prices

	Steel.		Iron.	
	Black	Galv.	Black.	Galv.
Butt.				
⅛ inch and ¼ inch.	70.2	49.2	62.2	41.2
⅜ inch	74.2	63.2	67.2	51.2
½ inch to 1½ inch.	77.2	68.2	70.2	58.2
Lap.				
2 inch	75.2	67.2	67.2	57.2
4½ inch to 6 inch..	76.2	67.2	68.2	59.2
Card Weight.				
7 inch to 12 inch....	74.2	63.2	67.2	56.2
Extra Strong Plain Ends.				
Butt.				
⅛, ¼, ⅜ inch.....	65.2	53.2	59.2	47.2
½ inch	70.2	58.2	64.2	52.2
2 inch to 3 inch....	75.2	63.2	....	....
Lap.				
2 inch	71.2	59.2	65.2	53.2
7 inch to 8 inch....	66.2	54.2	60.2	48.2
Double Extra Strong.				
Butt.				
½ inch	58.2	46.2	....	....
¾ inch to 1½ inch.	61.2	49.2	....	....
Lap.				
2 inch	59.2	47.2	....	....
4½ inch to 6 inch..	60.2	48.2	....	....
7 inch to 8 inch....	54.2	42.2	....	....

Tubes.

	Lap weld steel.	Charcoal iron.	Shelby. seamless.
	Per cent.	Per cent.	Per cent.
1 inch	38	..	56½
1¼ to 2¼ inch.....	54	39	34
2¾ to 3¼ inch.....	64	49	45
3½ to 4½ inch.....	66½	49	45
5 to 6 inch.....	54	..	..

Cast Iron Pipe.—Inquiries for cast iron pipe are fair and it is reported that considerable new business is in prospect. No advance in quotations has materialized, the market, however, being very firm. The order for 7,000 tons of 6-inch pipe from the city of Omaha, which was reported as pending last week, has been taken by the United States Cast Iron Pipe & Foundry Co. The same producer has also taken 1,600 tons of 6-inch piping from Kansas City.

We quote, f. o. b. Chicago, as follows:

Four-inch water pipe, $27.00, 6 to 12 inches, $25.00, larger sizes, $24.50; gas pipe, $1 a ton higher.

Old Material.—No further weakening in the scrap market has materialized, and quotations remain at the figures of the previous week. Offerings by the railroads are small, the principal lists being issued by the Grand Trunk, the Soo Line and the Union Pacific. The former includes 73,000 feet of steel rails and the principal items in the Soo list are 160 tons of mixed scrap and 200 tons of rails. The principal item of the list issued by the Union Pacific is 75 tons of No. 1 railroad wrought. The decrease in railroad offerings may prevent a further weakening in the scrap market which must eventually have come had the offerings continued at the rate that has recently maintained.

We quote, for delivery in consumers' yards, Chicago, as follows:

Gross Tons

Old car wheels	$13.25 to 13.75
Old iron rails	16.50 to 17.00

Rerolling rails (5 ft. and over)	13.25 to 13.75
Old steel rails (3 ft. and under)	12.50 to 13.00
Frogs, switches and guards	12.00 to 12.50
Heavy melting steel	12.00 to 12.50
Shoveling steel	11.75 to 12.25

Net Tons

No. 1 R. R. wrought	$12.50 to 13.00
No. 2 R. R. wrought	11.50 to 12.00
Arch bars and transoms	15.00 to 15.50
Knuckles, couplers and springs	11.50 to 12.00
Shafting	14.50 to 15.00
Iron car axles	19.00 to 19.50
Steel car axles	15.75 to 16.25
Locomotive tires	13.50 to 14.00
Dealers forge	10.00 to 10.50
Pipe and flues	9.00 to 9.50
No. 1 cast	12.00 to 12.50
No. 1 busheling	10.25 to 10.75
No. 2 busheling	7.50 to 8.00
No. 1 boiler cut	8.25 to 8.75
Boiler punchings	12.50 to 13.00
Cast and mixed borings	6.50 to 7.00
Machine shop turnings	7.25 to 7.75
Railroad malleable	11.75 to 12.25
Agricultural malleable	10.50 to 11.00
Angle bars, splices, etc., iron	14.00 to 14.50
Angle bars, steel	11.50 to 12.00
Stove plate and light cast scrap	10.00 to 10.50

PHILADELPHIA

Less Activity in the East, But Strong Tone

Office of THE IRON TRADE REVIEW,
Philadelphia, June 18.

A decreased volume of new business is active in the eastern market, but the situation shows strength and sentiment is favorable. Eastern mills are apparently shaping their policies in the belief that higher finished prices will later prevail for they are contracting reluctantly at ruling levels. Deliveries by eastern works are less prompt. Favorable conditions abroad are bringing some attractive inquiries for export before the eastern trade and some sales are being made. Pig iron is quieter, but prices are holding well. Eastern furnace men still decline to pay quoted values on contract coke. Several of the leading buyers of steel scrap have taken a heavy tonnage, but the market is again quiet, though strong.

Pig Iron.—The eastern Pennsylvania iron market has been quiet this week. Apart from the regular activity of the cast iron pipe makers, there has been little buying of consequence and inquiries of size are few. There is a fair miscellaneous interest in small tonnages among foundry consumers. Prices show considerable hardness. Several Lehigh and Schuylkill valley makers are quoting on the basis of $15 to $15.25, furnace, for No. 2X and $15.75, delivered Philadelphia, and a number of smaller lots are being booked on this level. The general spread of the market remains from $15.25 to $15.50, delivered. Virginia iron is firm at $13 to $13.25, furnace, for No. 2X. Pipe makers are paying higher prices and one of them is offering $14.85 to $14.90, delivered, for first quality low grade iron. A sale of 2,000 tons at about $15, delivered, or $14.25, Lehigh valley furnace, is noted. A Delaware river shop which has been out for 5,000 tons of forge and No. 3 for July-August has closed for 1,500 to 2,500 tons of northern iron around $14.75, delivered. Virginia pipe makers have made additional purchases. A sale of 1,000 tons of rolling mill forge at $14.75, delivered eastern Pennsylvania, is reported. There are no further developments in steel-making iron. One eastern steel works continues to inquire for 5,000 to 6,000 tons of basic for third quarter. A steel maker which took a large block of basic for last quarter at $15.25, delivered, as reported last week, would take additional iron around this basis, but eastern makers have been quoting $15.75, delivered, which is not attractive to the consumer. Some moderate sales of standard low phosphorus have been made at $20, Philadelphia basis. Another buyer of malleable in this district is out for 1,000 tons for last half, making the total pending inquiry for this grade 2,000 to 3,000 tons. Malleable prices are around $15.75 to $16, Philadelphia.

We quote for prompt and third quarter shipment at buyers' works in Philadelphia and vicinity as follows:

Eastern Pa. No. 1X foundry	$15.50 to 15.75
Eastern Pa. No. 2X foundry	15.25 to 15.50
Eastern Pa. No. 2 plain	15.00 to 15.25
Standard gray forge	14.50 to 14.75
Basic (Eastern and Central Pa.)	15.00 to 15.25
Virginia No. 2X	15.80 to 16.05
Southern No. 2	15.00 to 15.25
Standard low phosphorus	19.50 to 20.00

Coke.—Reports of $2.50, Connellsville ovens, having been done for last half in the east apparently refer to buying of low phosphorus coke by makers of low phosphorus pig iron. One of these interests has closed for about 30,000 tons for last half at $2.50, ovens. Another manufacturer of low phosphorus pig iron took 5,000 tons or so for early shipment at $2.35, ovens. There is practically no contracting for furnace coke in the east at present, as consumers continue to hold off. One Schuylkill valley furnace is inquiring for 4,000 to 8,000 tons monthly for last half. Prompt coke continues easy. Sales of a lot of Connellsville coke for quick shipment at $2.05, ovens, is noted this week, and of about 1,500 tons of West Virginia coke at $1.75, ovens.

Finished Material.—There is further evidence of conservative selling for last quarter and last half by eastern steel makers who apparently see a reasonable prospect for higher prices in these periods. Plate makers are rarely going beyond the third quarter at 1.25c, Pittsburgh, or 1.40c, Philadelphia. The shape mills are similarly careful. No less than two eastern shape makers are now asking 1.30c, Pittsburgh, or 1.45c, Philadelphia, for early delivery, and are obtaining this quite freely on small quantities. There is, however, some easiness in sizable shape business in this district and the full range of prices is from 1.20c to 1.30c, Pittsburgh, or 1.35c to 1.45c, Philadelphia. Bar iron is weaker, ruling around 1.30c, Philadelphia, and the price could probably be shaded. Steel bars and billets remain strong.

New business is lighter. One plate mill, however, reports it booked the past week a tonnage considerably in excess of its full capacity. Deliveries are not so prompt. Tank plates have been extended to about two weeks and universal plates to four weeks. One leading eastern shape mill is not promising under four to six weeks.

The American Bridge Co., it is generally conceded, will furnish 3,500 tons for the Fairmount hotel and 5,000 to 7,000 tons for an addition to the Curtis Publishing Co. plant, both this city. The general contract for the latter went this week to Doyle & Co. The Lehigh Valley Structural Steel Co., which recently took about 4,000 tons for New York territory, including 2,300 tons for additions to the Bellevue hospital and 1,400 tons for a hotel, as previously reported, is inquiring for the sub-letting of this fabricated work. Bids went in this

week for a new store for Burg & Burg, this city, 800 tons. The P. F. Gormley Construction Co. is low on a paper warehouse, Washington, 350 tons, for which Bethlehem sections are specified. An office building at Chattanooga, Tenn., 2,000 tons, is up. The C. & O. pier, at Newport News, Va., 8,000 to 10,000 tons, is still undecided. The Southern railroad is inquiring for plain material for the building of a number of locomotives. The Jones & Laughlin Steel Co. has been awarded 500 tons of steel bars for Panama.

We quote, delivered in Philadelphia and vicinity, as follows:

Plain structural shapes, 1.35c to 1.45c; tank plates, 1.40c; steel bars, 1.35c; common bar iron, 1.27c to 1.30c; cut nails, 1.65c to 1.70c; blue annealed sheets, No. 10 gage 1.55c to 1.60c; 4 x 4-inch open-hearth rolling billets, $23.40 to $24.40; forging billets, $28.40. Extras shown under Pittsburgh report. Philadelphia warehouse prices 1.75c for plates, shapes and bars.

Export Trade.—Prosperous conditions with the steel industry of Germany and England are causing a freer inquiry in the eastern market for iron and steel products for export. On steel plates, some exporters have been offering only slightly below the full price of 1.25c, Pittsburgh. A new inquiry for 2,000 tons of plates is out and another for 4,000 tons for England remains pending. A lot of 1,000 tons of sheet bars for Glasgow, Scotland, was inquired for this week. As reported Pittsburgh mills have just sold 5,000 tons of steel skelp for delivery to England.

Old Material.—Three or four eastern Pennsylvania and New Jersey steel works have recently closed for a round tonnage of heavy melting steel, estimated at about 25,000 tons and have again withdrawn. The price was uniformly $13.50, delivered. The purchase by one of these buyers amounting to about 10,000 tons was reported last week. Another steel maker has cleaned up the low priced borings in this market, taking about 5,000 tons at $9.50, delivered, and sending up prices about 50 cents as a result. This grade is now moving freer, the congestion at Steelton having been relieved and shipments resumed. Turnings are also stronger. Low phosphorus scrap is higher at $16.75 to $17.25, delivered. The rolling mills are doing little buying and No. 1 wrought is weaker. After the sizable buying referred to, the market has become largely inactive. There is considerable holding back of material from the market by the yards and producers.

We quote gross tons, delivered at buyers' works in eastern Pennsylvania and western New Jersey, as follows:

Old iron rails	$16.50 to 17.00
Old steel rails (rerolling)	14.75 to 15.25
No. 1 heavy melting steel	13.50 to 13.75
Old car wheels	14.00 to 14.25
Old iron axles	23.00 to 24.00
Old steel axles	17.50 to 18.00
No. 1 railroad wrought	15.50 to 16.00
Wrought pipe	12.50 to 13.00
Cast borings	9.50 to 10.00
Machine shop turnings	10.50 to 11.00
Heavy cast	13.50 to 14.00
Malleable	11.75 to 12.25
Stove plate	10.50 to 11.00
No. 1 forge	12.00 to 12.50

Freight rates per ton on scrap from Philadelphia to principal eastern consuming points are: $0.60 to Ivy Rock, Pa.; $0.65 to Phoenixville, Pa.; $0.80 to Coatesville, Pa.; $0.85 to Bethlehem, Pa., Reading, Pa., and Roebling, N. J.; $1.10 to Pottsville, Pa., Lebanon, Pa., and Columbia, Pa.; $1.20 to Harrisburg and Steelton, Pa.; $1.40 to Milton, Pa.

ST. LOUIS

Quotation of $11 on South Iron Disappears

Office of THE IRON TRADE REVIEW,
St. Louis, June 18.

Pig Iron. — The $11.00 price for southern No. 2 iron seems to have disappeared from the St. Louis market, and that grade is now offered at from $11.25 to $11.50, Birmingham basis. The inquiry in the market does not exceed 800 tons, perhaps, divided between northern and southern grades in lots of from 200 to 300 tons. A sale of 1,000 tons of car wheel iron was made the latter part of last week to a local melter for delivery over the year. Our tabulated prices on southern iron, delivered, to which the Birmingham freight of $3.75 has been added, follow:

Southern	No. 1	$15.50 to 16.00
Southern	No. 2	15.00 to 15.60
Southern	No. 3	14.50 to 15.00
Southern	No. 4	14.00 to 14.50

Coke. — Although inquiry is light, prices of coke are stiffening, and local sales agents are looking forward to better business. Our prices follow:

We quote 72-hour Connellsville foundry grades, $2.50 for immediate shipment or delivery through the year; 48-hour Connellsville furnace, $2.25; best 72-hour Virginia foundry, $2.50 to $2.75; 48-hour Virginia furnace, $2.25 to $2.40. The freight to East St. Louis and St. Louis is $2.80, and $2.70 from the Virginia fields when shipment is destined beyond St. Louis.

Finished Material. — The plants of the American Car & Foundry Co. in St. Louis, St. Charles and elsewhere are working up to about 75 per cent of their capacity, and judging from the present orders on the company's books, the mills will be kept running at the present rate until the end of the third quarter, even if no new business comes in. While the total inquiry for rolling stock is not large, it is believed that the railroads are only waiting for crop developments to give orders to increase their equipment.

Several railroads are in the market for a total of about 40,000 tons of standard steel rails. Steel bars are in good demand at 1.20c, Pittsburgh, with specifications good on contracts, but very little new business. Steel plates and structural material remain at 1.25c, Pittsburgh, and both are in good demand, with extended deliveries. Spikes are in excellent demand, and shipments are very much behind.

Old Material.—Very little trading is going on in scrap iron, but prices which dealers are willing to pay f. o. b., St. Louis, remain firm, as follows:

Gross Tons

Old car wheels	$13.50 to 14.25
Old iron rails	15.25 to 15.50
Re-rolling rails (5 ft. and over)	13.25 to 13.75
Old steel rails (3 ft. and under)	12.25 to 13.25
Light section relayers (45 lb. and under) subject to inspec.	21.50 to 22.50
Re-laying rails, subject to inspec.	22.50 to 23.25
Frogs, switches and guards	10.50 to 11.25
Heavy melting steel	11.50 to 12.25
Shoveling steel	10.75 to 11.25

Net Tons

No. 1 railroad wrought	$11.50 to 12.00
No. 2 railroad wrought	10.50 to 11.00
Arch bars and transoms	14.25 to 14.50
Knuckles, couplers and springs	13.50 to 11.00
Shafting	14.00 to 14.50
Iron car axles	18.50 to 19.00
Steel car axles	16.00 to 16.50
Locomotive tires	11.50 to 12.00
No. 1 country wrought	9.25 to 9.75
Pipe and flues	8.50 to 9.00
Tank iron and cut boilers	7.50 to 8.00
No. 1 cut busheling	9.25 to 9.75
No. 2 cut busheling	6.25 to 6.75
Cast and mixed borings	6.25 to 6.50
Machine shop turnings	7.00 to 7.25
Railroad malleable	10.50 to 11.00
Agricultural, malleable	9.50 to 10.00
Stove plates	9.50 to 10.00
Angle splice bars (iron)	11.25 to 12.00
Angle splice bars (steel)	9.50 to 10.00

Will Sell Bonds

Negotiations now under way in London for the issuance of £1,130,000 5 per cent bonds of the Algoma Steel Corporation are in connection with the recent amalgamation and financing of the steel plants of the Lake Superior Corporation into one concern. This proposed issuance is the first offering of a total authorized bond issue of $30,000,000.

The annual meeting of the stockholders of the American Car & Foundry Co. will be held at its office, 243 Washington street, Jersey City, N. J., June 27, to elect a board of directors and transact general business.

CLEVELAND

Strong Demand for Open Hearth Steel

Office of THE IRON TRADE REVIEW, Penton Bldg., June 18.

Iron Ore.—It is expected the June movement of iron ore will be a record breaker, despite delays experienced at both the upper and lower lake ports the last week. Lake trade has never been in better shape as far as volume of freight is concerned. For the first time in almost two years, nearly all of the steel tonnage is in commission and all of the boats are well employed. The low stages of water have prevented the big vessels from carrying as much as in former years, and boats are not earning so much as in former years, owing to the ill-advised acceptance of the reduction in the freight rate, but good feeling prevails—inasmuch as all the boats are busy. Practically the whole movement of iron ore is being handled in contract ships. The coal trade, too, is picking up, though it also is being handled in contract ships.

On base ores with the guarantee of 55 per cent on old range and Mesabi Bessemer, and 51½ per cent on old range and Mesabi non-Bessemer, we quote as follows: Old range Bessemer, $3.75; Mesabi Bessemer, $3.50; old range non-Bessemer, $3.05; Mesabi non-Bessemer, $2.85.

Pig Iron.—A good volume of business prevails and general satisfaction is expressed among pig iron dealers for the last week. The recently advanced price for No. 2 foundry continues to be asked and several small orders were filled the last few days. The Aultman-Taylor Co., Mansfield, O., is in the market for 1,000 tons of No. 2 foundry, for last half requirements, and the Michigan Malleable Iron Co., Detroit, is out for 2,000 tons of No. 2. Prices have remained unchanged. We quote, delivered in Cleveland, as follows:

No. 1 foundry	$14.25
No. 2 foundry	13.75
No. 2 southern	15.35
Gray forge	13.25
Bessemer	15.15
Lake Superior charcoal	15.75
Jackson co. 8 per cent silvery	16.00

Coke. — The question regarding prices to be asked in the future for contract coke has not yet been determined, and furnace men do not seem anxious to contract at present. There has not been much activity in the foundry coke field, as most of the local buyers are well provided for last half requirements. We quote:

Connellsville furnace coke, $2.00 to $2.15 for prompt delivery, and $2.25 to $2.50 on contract; Connellsville foundry coke, $2.50 to $2.75 for prompt, and $2.50 to $2.75 on contract.

Finished Material.—The decision of the Cambria Steel Co. to increase its open hearth capacity, by the addition of three furnaces, shows the continued popularity of open hearth steel for all finished products. This company has been unable to keep up with the demand of its customers for open hearth steel. The leading interest is not promising deliveries earlier than August on shapes and plates. On bars, deliveries vary widely, according to sizes. In open hearth steel bars of some sizes, it is difficult to get deliveries in less than 10 weeks. Some of the leading independent manufacturers are not making contracts for the remainder of the year for shapes, plates and bars, because orders are up to capacity. The market for shafting is improving, having gained considerable strength since April, when sales were being made in some cases at 70 off while now the ordinary quotation is 65 off for car load lots and 60 off for less than car load lots. Plates are strong. Several inquiries are pending for steel cars and specifications are coming in freely from boiler manufacturers. About 100 tons of sheet piling are to be used in a new bridge at Toledo. The Lackawanna Steel Co. has received a contract from the Toledo Railways & Light Co., Toledo, for 500 tons of rails. One of the Pennsylvania sheet manufacturers, far behind in deliveries, has notified its representatives not to solicit any more new business, either from old or new customers. Like many other companies, this concern is several months behind on deliveries, after cancelling unspecified contracts. Generally speaking, specifications of finished products are about equal to shipments.

The price of bar iron has been advanced $1 per ton, the quotation now being 1.30c, Cleveland. The Cleveland mills are well supplied with orders and the Empire and Union plants do not expect to have the usual July shutdown, as it will be necessary for them to keep running to the fullest extent possible in order to fill their orders. The slight uncertainty concerning wage adjustment has not caused any uneasiness in this city.

Old Material.—Although the market has been rather quiet the last few days local iron and steel scrap sellers and buyers are well pleased with present conditions. Dealers have fallen somewhat behind in deliveries, due to a scarcity of common labor, but believe they can catch up considerably, if active buying is not renewed immediately. There have been several good inquiries out for heavy melting steel, but dealers seem to be holding out for advanced prices. They claim local yards are fairly well cleaned up and say indications point to an increase—especially if pig iron advances again. Buyers, however, report they have been able to get all the stock they desire, at market prices. Machine shop turnings and cast borings have been in good demand, and several good shipments have been made to Pittsburgh mills. There also has been a good demand for busheling, most of which has gone to local mills. No new lists have come out. The N. & W. list, which closed Monday, went to consumers in this and the Pittsburgh district. We quote, gross tons, f. o. b. Cleveland, as follows:

Gross Tons.

Old iron rails	$15.00 to 15.50
Old steel rails (under 6 ft.)	13.00 to 13.50
Old steel rails (over 6 ft.)	13.25 to 13.75
Relaying rails	19.50 to 20.00
Old car wheels	13.00 to 13.50
Old steel boiler plate	10.00 to 10.50
Malleable iron (railroad)	12.50 to 13.00
Steel axles	17.00 to 17.50
Axle turnings	10.00 to 10.50
Malleable iron (agricultural)	10.00 to 10.50
Heavy steel	12.25 to 12.75
Country mixed steel	10.75 to 11.25
Bundled sheet scrap	10.00 to 10.50

Net Tons.

No. 1 R. R. wrought	$12.00 to 12.50
No. 1 busheling	11.00 to 11.50
No. 1 machine cast	11.00 to 11.50
No. 1 dealers' wrought	10.00 to 10.50
Machine shop turnings	7.75 to 8.00
Pipes and flues	9.50 to 10.00
Wrought drillings	7.75 to 8.00
Stove plate	9.50 to 10.00
Cast borings	7.75 to 8.00
Wrought iron piling plate	14.50 to 15.00
Wrought iron arch bars	14.00 to 14.50

The Central Iron & Steel Co., Harrisburg, Pa., will start a blast furnace this month that has been idle for a period of two years or more.

CINCINNATI

Pig Iron Prices Slowly Advancing

Office of THE IRON TRADE REVIEW,
503 Mercantile Library Bldg., June 18.

Pig Iron.—The local pig iron market is still dull in regard to actual buying and selling, but the situation, especially in the south, is strong, and prices are slowly but gradually advancing. The outlook in southern Ohio is better than it has been for some time, and although prices in the Ironton district have been generally advanced, it can hardly be said that they have been firmly established, as nothing of importance has occurred lately to test the market. Those furnaces in the Hanging Rock district which have been selling No. 2 foundry iron on a $13 and $13.25 Ironton basis, for the past four or five weeks, have notified the market here that the price has been advanced to $13.50, and as the other furnaces have been holding at this figure, it is now the general quotation. One large interest in the Ironton district has withdrawn from the market on Nos. 2 and 3 foundry grades, and is now offering only some iron higher in silicon. In the south, there is a good forwarding movement of iron, and stocks continue to be reduced. In some cases, local dealers state that they cannot always get enough iron to supply their customers who have contracted, as some of the furnaces have withdrawn from the market, and others are limiting the amount of iron they will sell. Although some No. 2 foundry spot iron can still be had in the south on an $11 Birmingham basis, it is becoming more scarce every day. Contract iron for the third and fourth quarters is quoted at from $11.25 to $11.50. Recent sales include 2,000 tons of Lake Superior charcoal iron in Michigan territory, 500 tons of northern iron in southern Indiana and 600 tons in central Ohio. There is an inquiry in the market here for 1,000 tons of northern iron from central Ohio and one for the same amount from the northern part of the state. A local user wants 150 tons of 6 per cent silicon iron and a melter in the central part of the state is out for 400 tons of malleable iron. With freight rates $3.25 from Birmingham and $1.20 from Ironton, we quote Cincinnati prices as follows:

Southern foundry No. 2	$14.25 to 14.50
Southern foundry No. 3	13.75 to 14.00
Southern foundry No. 4	13.50 to 13.75
Southern gray forge	13.00 to 13.25
Mottled	12.25 to 12.50
Southern No. 1 soft	14.75 to 15.00
Southern No. 2 soft	14.25 to 14.50
Standard southern car wheel	25.25 to 25.50
Northern No. 2 foundry	14.45 to 14.70
Northern No. 3 foundry	13.95 to 14.20
Northern No. 4 foundry	13.70 to 13.95
Jackson co. 8 per cent silicon	16.95 to 17.20

Coke.—The market for spot coke is a little weaker, but that for contract is holding well and prices have not changed. The market is also a little more quiet than it has been for some time. A number of the southern Ohio furnaces have not closed as yet for their requirements for the next six months or year, but have been holding out with the hope that prices would weaken. This is hardly probable, though, and they are expected to buy shortly. The demand for foundry coke has not improved, as the melt locally has not been increased, and it would be safe to say that at present only from about 50 to 60 per cent of the foundry capacity of this city is active. There are some fair inquiries in the market for both foundry and furnace coke, the latter, to a large extent, coming from the Ironton district. An offer of $1.95 a ton was recently refused by a Wise county interest for a grade of foundry coke that has been selling at this figure. There is not much of a market here at present for spot coke, and most of the buying is being made on contracts that run through for a year. Connellsville foundry coke for contract shipment is bringing all the way from $2.50 to $2.75 and furnace coke from $2.25 to $2.50, for the best grades. Prices on the spot market are uncertain and lower, depending more upon the conditions of the sale than anything else. Labor trouble still prevails throughout the coke fields, and many of the ovens are seriously handicapped both in the production and the loading of their coke. We quote from the leading coke producing districts as follows:

	Prompt shipment.	Contract second half.
Connellsville district:		
Foundry coke	$2.25 to 2.50	$2.50 to 2.75
Furnace coke	2.00 to 2.15	2.25 to 2.50
Wise county district:		
Foundry coke	$2.00 to 2.35	$2.50 to 2.75
Furnace coke	2.00 to 2.25	*Sliding [scale basis
Pocahontas district:		
Foundry coke	$2.00 to 2.25	$2.50 to 2.90
Furnace coke	1.75 to 2.00	1.85 to 2.25
New river:		
Foundry coke	$2.50 to 3.00	$3.00 to 3.25
Furnace coke	2.15 to 2.25	2.35 to 2.50

*Sliding scale basis means $1.60 for coke based on $9, Birmingham, for pig iron, with an advance of 16 2-3 per cent of the amount over $9 which pig iron is quoted. This is the usual basis. Other forms of sliding contracts are also made.

Finished Material.—A fairly good business is being done on steel bars and structurals, and prices on both have remained firm at 1.20c on the former and 1.25c on the latter, both Pittsburgh basis. It is generally predicted here that these quotations will be advanced before long, probably before the middle of July. The local sheet market is better than it has been for some time, and the local mill has booked orders during the past week that will keep it running to full capacity for over 60 days. If the present volume of business continues, deliveries on contracts will soon be further delayed. Prices are firm at 1.95c for black sheets, No. 28, and 3c for galvanized No. 28, both Pittsburgh basis. A general rise in price on sheets is also predicted soon, as a number of mills, including the local plant, will close down within the next month or so to make extensive repairs. The new office building of the Bell Telephone Co., to be built at Fourth and Hammond streets, this city, will be 12 stories instead of 10, as originally planned, and will be of the steel skeleton type. Architect Harry Hake, of this city, is preparing the plans. Estimates on the new St. Elizabeth's hospital, Covington, Ky., which will cost about $750,000, will be received until July 8, by Architects Samuel Hannaford & Sons, Cincinnati. For mill prices, see Pittsburgh report.

Warehouse business continues fair, and prices unchanged. Demand is mostly for material used by builders, such as concrete re-inforcing bars, shapes, etc., which shows that there is a good building movement here at the present time. We quote warehouse prices, f. o. b. Cincinnati, as follows:

Steel bars, 1.65c base; iron bars, 1.60c base; structurals, 1.75c base; plates, ¼ inch and over, 1.75c base; sheets, blue annealed

No. 10, 1.95c base; rivets, cone head, 2.30c base; cold rolled shafting, 60 per cent discount; boiler tubes as follows: 1¾ to 2¼ inch, 60 per cent discount; 2½ inch, 62 per cent discount; 2¾ to 3¼ inch, 65 per cent discount; 3½ to 4½ inch, 67 per cent discount; and 5 to 6 inch, 60 per cent discount; soft steel cold twisted concrete bars, 60 per cent discount; soft steel cold twisted concrete bars, cut to length as follows: ¾ inch square and larger, 1.75c; ⅝ inch square and larger, 1.85c; ½ inch square and larger, 1.95c; 5-16 to ⅜ inch square and larger, 2.15c; ¼ inch square and larger, 2.25c.

Old Material.—Prices on almost all grades of scrap iron have fallen off from 25 cents to 50 cents a ton. Dealers have been moving stocks rapidly, and users are now generally well supplied, which is one reason why the prices have declined. The chattels of the Phillemae Rolling Mill Co., Glendale, O., which has been operating a small bar mill until a short time ago under a receiver, were sold at auction, June 17, for a total of $8,200, separate lots being bought by scrap iron dealers from Cincinnati, St. Louis, Dayton, Pittsburgh and Youngstown, O. We quote prices dealers will pay in Cincinnati and vicinity, as follows:

Gross Tons

Old iron rails	$12.65 to 13.25
Old steel rerolling	11.00 to 11.50
Old iron axles	18.50 to 19.00
Heavy melting scrap	10.00 to 10.50
Relaying rails	20.00 to 21.00
Bundled sheet scrap	8.50 to 9.25

Net Tons.

Old No. 1 R. R. wrought	$10.25 to 10.75
No. 1 machinery cast	10.25 to 11.00
No. 1 busheling	8.50 to 9.25
Stove plate	7.00 to 8.00
Machine shop turnings	6.50 to 7.00
Cast borings	6.25 to 6.75
Heavy turnings	7.00 to 7.50
Mixed cast	8.00 to 9.00
Malleable	8.50 to 9.00

NEW YORK

Jersey Foundries Buy Freely---Sale of Cuban Ore

Office of THE IRON TRADE REVIEW, 1115 West Street Bldg., June 18.

Iron Ore. — A number of additional sales of El Cuero, Cuban, ore, aggregating about 90,000 tons, for last half shipment, has been made to eastern furnaces at a slight advance. In several cases, these transactions represent extensions of first half contracts. One buyer took 15,000 tons of this ore at 7¼ cents per unit, f. o. b. cars, Philadelphia. This represents an advance of ¼ cent per unit over the sales made for first half, which were done at 7 cents. The same buyer has also taken 15,000 tons of Bathhurst, New Brunswick, 48 per cent magnetic ore at terms not divulged. Another eastern furnace has taken about 10,000 tons of special grade low phosphorus ore. Miners of trans-Atlantic foreign ores are stiffer in their views on material laid down at Philadelphia. In one case, the price has been marked up 25 cents a ton. Ocean ore freights show no transactions at lower rates, but the demand for bottoms has appreciably slackened, and the freight market may turn soft.

Pig Iron. — Quite a lively market for iron developed in certain localities in this district during the past week. New Jersey foundries have been especially active in covering for their third quarter and last half requirements. The principal buying has been done by a large special machinery manufacturer in that section which in the past week took about 7,500 tons additional of foundry iron for last half shipment to an eastern plant. This consumer has been buying quietly during the past three or four weeks on its requirements for eastern and middle western plants and has closed for at least 20,000 tons for last half, which will be drawn from various makers. Newark, N. J., consumers have been buying liberally. One shop took 2,000 to 3,000 tons of No. 2X for last half, another 1,000 tons for last half and another closed partially against 1,500 tons of No. 2 grades for last half. An inquiry for 1,000 tons of special No. 1 for last quarter is pending. A Bridgeport, Conn., buyer is in the market for 5,000 tons of No. 2X for last half. The Delaware, Lackawanna & Western railroad will close this week on 1,750 tons of No. 1 and 2 plain for last half delivery at Scranton. The New York Air Brake Co. is also about to close on its inquiry for 7,000 tons for forward shipment, which has been current for two weeks. This inquiry includes 2,000 tons of No. 1, 2,000 tons of No. 2, 2,000 tons of No. 3, and 1,000 tons of malleable. The business of the last two buyers is expected to go largely to Buffalo makers. The total pending inquiry in this market is about 20,000 tons. Prices in the main show considerable strength, but there are scattered instances of comparatively low levels still being done. One Newark foundry is understood to have bought its No. 2X from an eastern furnace at between $15.00 and $15.25, delivered. On the other hand, an increased number of sales has been done on the basis of about $15.75, tidewater for No. 2X, representing $15.00, Lehigh Valley furnace, and $14.00, Buffalo. The tidewater market appears to be working towards this level. Some Buffalo iron has also been sold for New England shipment at $14.00, furnace, or $16.45, delivered. One Schuylkill Valley maker is quoting $15.25, furnace, or $16.15, Jersey City, for No. 2X. We quote at tidewater for prompt and third quarter shipment, as follows, southern and Virginia iron being given at New York docks:

Northern foundry No. 1	$15.50 to 16.00
No. 2X foundry	15.25 to 15.75
No. 2 plain	14.75 to 15.00
No. 2 Virginia	15.80 to 16.05
No. 2 southern foundry	15.00 to 15.25
Malleable	15.50 to 15.75
Gray forge	14.50 to 14.75

Ferro-Alloys.—The market is quiet on forward business, but there continues some demand for prompt material. Sales of several additional carloads this week at $50.00, seaboard, are reported. Contract ferro-manganese is firm at $48.50, seaboard. An eastern buyer is inquiring for 500 tons of spiegeleisen, upon which quotations run from $29.00 to $30.00, seaboard. The 50 per cent ferro-silicon market is stronger at prices ranging upwards of $70.00, seaboard. We quote standard English ferro-manganese at $48.50, seaboard, on contract and for prompt shipment at $50.00, seaboard, and 50 per cent ferro-silicon at from $70.00 to $72.00, Pittsburgh.

Cast Iron Pipe. — The volume of new business remains quite satisfactory to the shops, but the improvement in prices is still coming slowly. The Soraci Construction Co. is the low bidder for 900 tons of 6 to 20-inch pipe for Manhattan and Bronx and the Donlon Construction Co. on 750 tons mainly 20s for Brooklyn. Both are contractor's lettings. Washington, D. C., will take bids June 27 on 2,745 tons. Sunbury, Pa., took bids this week on 535 tons. We quote 6-inch pipe at from $21.00 to $22.00, f. o. b. New York, in carload lots, with some makers asking up to $23.00.

Finished Material.—There is some disposition to attribute the quieter state

of new business in finished lines to the heated political conditions radiating from Chicago. The trade is, undoubtedly, giving this factor more or less attention at this time, but the decreased briskness in new buying has been more or less apparent in the market for several weeks and is probably due to a lull between buying movements. There is some contracting for third quarter to renew contracts expiring July 1, but this is not extensive and consumers are engaged more in taking out the final portions of their second quarter allotments. A great many consumers are undoubtedly already covered through the third quarter, but there promises to be more buying in this direction before many weeks.

Eastern shape mills are reporting that they are having little difficulty to obtain 1.30c, Pittsburgh, or 1.46c, New York, on moderate sized lots for prompt shipment. There is less evidence of any concessions being made on shapes or plates also and instances indicate that full prices are being well upheld except to possibly the very large buyers. Steel bars are unchanged, but bar iron is not so strong. Billets are very firm and the supply is somewhat restricted, owing to the heavy finishing operations of the mills.

Fabricated prices are stronger by several dollars in this market, reflecting in this respect the firm condition on plain material. Work is being placed at present at about $45.00 to $46.00 per ton, erected, which is fully $2.00 to $3.00 above what has recently ruled in this market. At the moment, the structural market shows a seasonable quietness.

Lettings in the week include 1,400 tons to the Lehigh Valley Structural Steel Co. for a hotel at Seventh avenue and 124th street; 1,000 tons to the Hay Foundry & Iron Works, for a loft on West Twenty-fifth street; 600 tons to the Hedden Iron Construction Co., for the Seaich loft on East Thirty-second street; 500 tons to the American Bridge Co., for a school of journalism, Columbia University. There is no decision on the Adams Express building, upon which the latest estimate of the steel requirements runs about 13,000 tons. The New York Dock Co. is taking bids for an extension of a dock in Brooklyn, to require about 500 tons. The City of Boston is inquiring for a highway bridge to require about 1,000 tons. Railroad work is rather light. The Lehigh Valley railroad has placed about 1,100 tons of bridge work, of which 400 tons went to the American Bridge Co. and the remainder to several independent contractors. The Boston & Albany has closed for 350 tons of bridge work with an independent shop. The New York Central railroad is still deferring action on an aggregate of about 3,000 tons of work, including 1,500 tons for a bridge at Oswego, upon which bids have been in for some time and about 500 tons for the terminal area, this city. The Boston & Maine and the Maine Central are expected to shortly put out bids for about 1,000 tons of bridge work. We quote, delivered at New York tidewater, as follows:

Plain structural shapes, 1.41c. to 1.46c; tank plates, 1.41c; steel bars, 1.36c; common iron bars, 1.30c to 1.35c; steel bars from store, 1.80c; plates and shapes from store, 1.90c; extras as shown under Pittsburgh report.

Rails and Track Material. — The Harriman Lines have placed an additional order for 12,000 tons of open-hearth rails with the Illinois Steel Co. This brings the total purchases of this system made at various times this year to about 70,000 tons. It will probably buy further at intervals throughout the year. Some of the rail mills are faced with a problem in meeting the delivery demands of different roads for open-hearth rails, owing to the heavily sold up condition of capacity of this character.

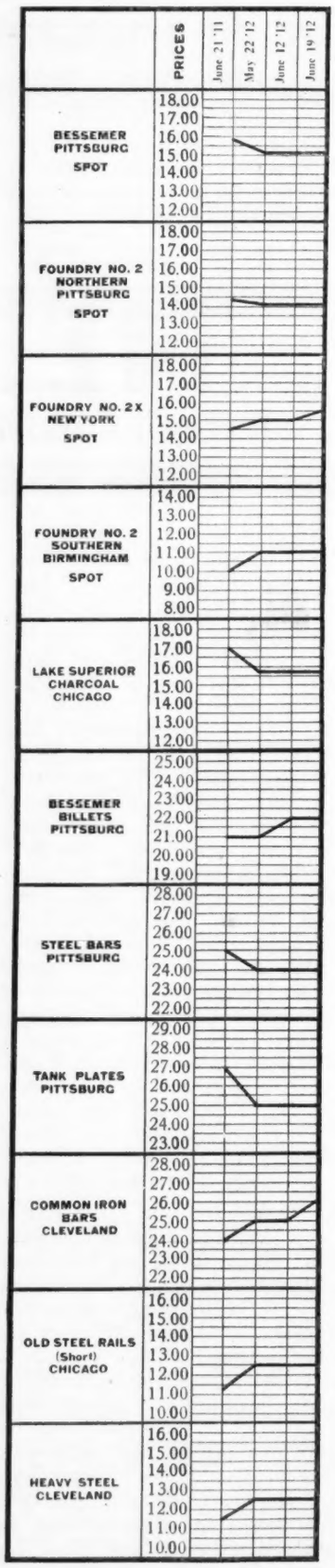
Old Material. — There is a fair amount of business transacted in old material in this market, though large sales are exceptional. Recent active buying of heavy melting steel by eastern Pennsylvania works has been but little reflected in this market. Though $13.50, delivered, is the price announced in this business, it is reported that in some cases $13.75 has been done. Some buying of borings has been done by steel works and this grade is slightly higher. Demand for wrought material is light. Wrought pipe has sold at lower levels. Offerings of cast scrap are liberal and sales are moderate. We quote, gross tons, prices New York dealers will pay at tidewater, as follows:

Old car wheels	$11.25 to 11.75
Old iron axles	20.00 to 21.00
Steel axles	15.00 to 15.50
Old steel shafting	14.00 to 14.25
No. 1 heavy melting steel	11.00 to 11.25
No. 1 R. R. wrought	13.25 to 13.50
Wrought pipe	9.75 to 10.00
Cast borings	7.25 to 7.50
Machine shop turnings	8.25 to 8.50
Heavy cast	11.00 to 11.50
R. R. malleable	9.50 to 10.00
Stove plate	8.25 to 8.75
Grate bars	7.25 to 7.75

Freight rates on scrap per ton to Steelton, Pa., Columbia, Pa., Pottsville, Pa., and Harrisburg, Pa., are $1.50 from Jersey City and $2.00 from New York; to Coatesville, Pa., Ivy Rock, Pa., Phoenixville, Pa., and Reading, Pa., $1.50 from Jersey City and $1.80 from New York; to Bethlehem, Pa., $1.10 from Jersey City and $1.60 from New York; to Roebling, N. J.; $1.00 from Jersey City and $1.50 from New York; to Milton, Pa., $1.60 from Jersey City, and $2.00 from New York; to Jersey City, $1.00 from New York; to Newark $1.10 from New York.

New Car Builders. — The Eastern Car Co., with a capital of $2,550,000, has been organized by interests identified with the Nova Scotia Steel & Coal Co. The company's works will be in New Glasgow, N. S., and from the opening will have a daily capacity of 25 steel frame cars.

PRICE CHART



BIRMINGHAM

Market More Active---Prices Stronger

Office of THE IRON TRADE REVIEW,
Birmingham, Ala., June 18.

Pig Iron. — No change in quotations has been made, but the market is more active than at the time of last report, and for strictly southern requirement, prices are stronger.

The sales of pig iron made in the past week were very satisfactory, comparatively, although small lots were involved in the majority of cases. One producer alone sold 5,000 tons during the week for last quarter shipment at $11.50 per ton for No. 2 foundry. This price just named was the consideration in all cases reported, where the period for delivery extended into the third quarter, but as just stated, no round tonnage propositions were closed. A single lot of 5,000 tons, for delivery over the remainder of the year, is pending, and a number of recent inquiries require lots of 1,200 to 1,500 tons each, all of which are expected to be closed at figures in line with a $11.50 per ton schedule. Where spot delivery could be made, certain brands of No. 2 foundry have recently sold at $11 per ton, Birmingham, with $10.75 per ton and $10.50 per ton, respectively, for Nos. 3 and 4 foundry. Certain other brands of No. 2 foundry have recently sold in small lots for spot shipment at $11.25 per ton, and in some instances, $11.50 per ton at furnace has been paid.

No mention whatever has been made of sales at lower figures than those referred to, and reports to the effect that a lower price than $11.50 per ton can be made applicable to deliveries through the remainder of the year are not verified. It is noted that two of the largest producers are not now solicitous of any additional business for the remainder of the year, and that furnace yards at two plants have been depleted of stock accumulations. The sale of a lot of 1,000 tons of warm blast charcoal iron has just been made, and as previously mentioned, the available tonnage of basic has been fairly well taken care of. In view of such conditions, and the outlook as indicated at present by the inquiry pending, the chief concern in local circles is the proposed increase in the active producing capacity.

The several grades are quoted as below, per gross ton, f. o. b. cars Birmingham furnaces, viz.:—

For delivery prior to last quarter:	
No. 1 foundry	$11.50 to 11.75
No. 2 foundry	11.00 to 11.25
No. 3 foundry	10.50 to 10.75
No. 4 foundry	10.00 to 10.50
Gray forge	9.75 to 10.25
Mottled	9.50 to 10.00
Standard basic	10.75 to 11.25
Off basic	10.50 to 10.75
Standard charcoal	22.50 to 23.00

With the exception of charcoal iron, an advance of 25c to 50c per ton would be asked over the above figures for deliveries in the last quarter.

Cast Iron Pipe.—Specifications for some 10,000 tons of water pipe to apply against contract placed by Chicago, some months since, have just been received. In addition to this, some 2,000 tons of water pipe has just been specified for the requirement at Los Angeles, Cal. Delivery is being made from local plants at a rate about equal to the output. Prices are very firm, and are quoted per net ton, f. o. b. cars foundry, for water pipe, as follows, viz.: 4-inch to 6-inch, $23.50; 8-inch to 12-inch, $22.50; over 12-inch, average $21.50, with $1 per ton extra for gas pipe. Special fittings are quotable, at from $47.50 to $50 per net ton at foundry, depending upon the size of the requirement.

BUFFALO

Recent Advances in Pig Iron Maintained

Office of THE IRON TRADE REVIEW,
Buffalo, June 18.

Pig Iron.—The recently advanced schedule of prices is holding as firm as a rock in this district, with the maximum on No. 1X and gray forge being advanced 25 cents. The sales for the week totaled from 10,000 to 12,000 tons, and the inquiries totaled about a like amount of all grades. The situation at present carries a sort of quiet atmosphere—due largely to the diverted interest of practically all sections, focused at this time upon the political conventions. The trade, however, seems fairly well covered for the year, although an added amount of business to that on which consumers have planned will undoubtedly show that most buyers have covered very conservatively.

Shipments continue to be made at a heavy rate by the blast furnaces, stocks on the yards are down to nil and the situation seems to have a good foundation. The coke situation has gone practically hand in hand with the pig iron market and has shown considerable strength, particularly in the foundry coke, on which sales have been running very heavy. Most of the better brands have little more to sell. The going price for these seems to be $2.75, net tons, f. o. b. cars, ovens. The range of prices for the week on the various grades of pig iron, f. o. b. furnaces, is:

No. 1X foundry	$14.25 to 14.75
No. 2X foundry	14.00 to 14.25
No. 2 plain	14.00
No. 3 foundry	13.75 to 14.00
Gray forge	13.50 to 14.00
Malleable	14.25 to 14.50
Basic	14.25 to 14.50
Charcoal	15.75 to 17.50

Finished Material.—An advance in price on some finished materials is looked forward to by many in this district, to take effect possibly with the beginning of the third quarter. Specifications continue to come in liberally on old contracts. There is a disposition for users to get out all the tonnage possible under these contracts, at prices, for the most part, slightly lower than the present prevailing base. The indications are that this tonnage is being used, as no requests are being made to have deliveries extended. It is the mills, and not the consumers, extending deliveries at this period. On structural and plates some interests cannot now make deliveries within less than eight to ten weeks, and on bars, a month is about the best time. Wire and wire products are holding firm, with a further advance apparently in sight.

Old Material.—The market has been characterized with another quiet week, although the dealers in the Buffalo district agree that the outlook for an improvement is very much better. Most of the buying was from the valley. The range of prices includes a slight advance in old car wheels and is substantially as follows, f. o. b. Buffalo, per gross ton:

Heavy melting steel	$12.75 to 13.25
No. 1 railroad wrought scrap	14.00 to 14.75
No. 1 R. R. and mch. cast scrap	13.50 to 14.00
Old steel axles	16.50 to 17.25
Iron axles	21.00 to 22.00
Car wheels	13.00 to 13.50
Railroad malleable, scrap	11.50 to 12.25
Wr'ght iron and soft steel turn.	8.00 to 8.50
Cast iron borings	7.00 to 7.50
Low phosphorus steel scrap	15.75 to 16.00
Old iron rail	15.00 to 15.50
Tank iron	10.00 to 10.25
Boiler plate, sheared	13.75 to 14.25
Pipe and tank	9.50 to 10.00
Stove plate	9.75 to 10.00
Sheet iron	7.00 to 7.50
Locomotive grate bars	11.00 to 11.25

METAL MARKETS

Scarcity of Tin Stops Buying---Copper Rises

New York

June 18.

Tin.—Scarcity of pig tin has become so pronounced in the New York market that buying in the interest of consumers has reached a minimum and among dealers both on the metal exchange and in the outside market business is practically suspended.

The London dock strike continues to hold up shipment at that point for this market, as well as distribution to foreign consumers. Stocks in English warehouses are said to be at the lowest within statistical history of the trade, and unless normal replenishing facilities are restored soon the spot supply of the metal will be entirely wiped out. There is still a premium on spot tin of about 3c in the domestic market. All business of the past week was done on that basis. Spot closed today 48.50c, June at 48.20c and July at 45.50c.

The London standard market closed at £207 for spot and £197 5s for three months.

Arrivals since June 1 aggregate 897 tons and there are 1,592 tons afloat.

Copper.—The market was further strengthened by the European fortnightly copper statistics which showed a decline in stocks of 420 tons, and in metal afloat of 1,550 tons, as of June 15. Standard copper rose to £79 13s 9d and three months to £80 5s on the London exchange and closed today but slightly lower at £79 11s 3d and £80 3s 9d, respectively.

Buying by domestic consumers has not been particularly active during the past week as there is a large amount of metal booked for delivery still to be drawn on. Consumption is at a high point of activity, however, and new supplies will be required shortly. Electrolytic copper is firm at 17.62½c, delivered, lake at 17.62½c to 17.75c, and casting at 17.25c. Exports since June 1 are 14,377 tons.

Lead.—As pointed out frequently in The Iron Trade Review during the past month the New York trade has anticipated an advance in the price of lead by the American Smelting & Refining Co. for some time. It developed June 12, and was immediately followed by higher prices among independent sellers. The general market is now 4.50c in New York, which is an advance of 30 points by the former and from 20 to 25 points by the latter interests.

Spelter.—The demand for spelter holds up to production capacity, and prices continue very firm. Prime western is quoted at 7.10c for June shipment, 6.95c for July and 6.80c for August.

Antimony.—The market is quiet at unchanged prices. Cookson's is 8c, Hallett's is 7.87c, and Hungarian is 7.12½c to 7.25c.

Chicago

June 18.

New Metals.—There is a good market for new metals and prices are as a whole firmer, with the exception of a slight shading on antimony. Lead continues to advance, selling for 4.47½c, as compared with 4.40c last week and lake copper has advanced from 17⅛c to 17⅜c.

We quote, dealers' selling prices, f. o. b. Chicago, as follows:

Lake copper, carload lots, 17⅜c; casting, 17c; smaller lots, ¼c to ¾c higher. Spelter, car lots, 6.85c; lead, desilverized, 4.20c in 50-ton lots; corroding, 4.47½c; sheet zinc, 8.65c, f. o. b. La Salle, in car lots of 600-pound casks; pig tin, 48.25c; Cookson's antimony, 8½c; other grades, 7½c to 8c.

Old Metals.—There is but little change over the quotations for the previous week, with the exception of a slight shading on copper and zinc scrap.

We quote, dealers' selling prices, f. o. b. Chicago, as follows:

Copper wire, crucible shapes, 14¾c; copper bottoms, 13¼c; heavy cut crucible copper, 14¾c; heavy red brass, 12½c; heavy yellow brass, 10c; No. 1 red brass borings, 11c; No. 1 yellow brass borings, 9c; brass clippings, 9¼c; lead pipe, 3½c; zinc scrap, 4¾c; tea lead, 4c; No. 1 aluminum, 12½c; No. 1 pewter, 28c; block tin pipe, 41c; tin foil, 35c; linotype dross, 3¼c; electrotype dross, 3c; stereotype plates, 4½c; stereotype dross, 3¼c; prime slab zinc dross, $90 a ton.

Power barges No. 2 and No. 3, built at the works of the Maryland Steel Co., at Sparrows point, Md., for the United States navy, have been completed, and in tow of the Baltimore tug Britannia have been taken to the Norfolk navy yard to be turned over to the government authorities.

URGENT DEMAND

For Crude Steel in England—Activity in Iron Trade.

Birmingham, Eng., June 10.—Throughout the iron and steel trade, boom conditions prevail, and all order books are congested. Practically, every new contract registers a slight advance. The Scotch bar makers advanced their prices 7s 6d per ton, making the basis £7 15s. Yet these prices are still materially below the selling figures in the northeast of England and in the Midlands. In South Yorkshire, 10s has been added to the basis price of bar iron, making the selling figure £8 5s for ordinary quality. There was a good deal of talk at Birmingham on Thursday about an impending rise in marked bars, which now stand at £9 per ton, but it is thought likely that this may be postponed until Quarter Day or before that date. Bar makers can now get £8 2s 6d to £8 5s, and consumers seem quite ready to pay almost anything that is asked. In Sheffield, all the works are running overtime, and most firms are booked forward from six to twelve months, even without another order. There have been some heavy bookings even this week, and there is every prospect of continued large demands from all iron and steel-using industries.

The most urgent demand continues to be that for raw steel. Buyers are competing against each other with offers, to get special attention. The market has been tightened by a coal strike, which has broken out in Belgium, and for the time being stopped steel production. Transport difficulties, due to the British dock strike, are restricting deliveries on all contracts. British billets now easily realize £6 to £6 2s 6d, and delivery is very difficult to obtain even at these high figures. In the raw steel department, a real famine has developed in respect of wire rods. The Continental supplies of these have practically ceased, and British wire rollers consequently find themselves in great difficulties for want of material.

According to the United States Geological Survey, more than 250,000 long tons of rails were rolled in 1910 from steel to which ferro-titanium had been added. More than 150,000 tons of steel rails in which nickel or nickel and chromium were used as alloy were also made during 1910, and experiments were made with about 80,000 tons of steel rails in which chromium, manganese, vanadium, and other metals were used.

DUPLEX STEEL MAKING

Coming Into Freer Use in East—Steelton and Bethlehem Resuming.

Steel making by the duplex process is again coming into more active use among eastern steel works. The Pennsylvania Steel Co. is starting its Bessemer plant at Steelton, Pa., this week and will be in a position to make steel by duplexing for the first time in about a year. The Bethlehem Steel Co., after having followed the process only at short intervals since and little before the latter part of 1911, is again making steel steadily by this method. The resumption of duplexing at South Bethlehem has come coincidently with the withdrawal of the company as an active seller of pig iron. This arises from the fact that practically 100 per cent of pig iron is used in duplexing as against 40 to 50 per cent mixtures in the scrap and pig metal conversion. No duplexing is being done at the Sparrows Point plant of the Maryland Steel Co., as the open-hearth furnaces there are idle.

The heavier use of the duplex method in the east symbolizes a considerably increased pig iron consumption at these plants. In this connection, the Pennsylvania Steel Co. blew in this week one furnace at Steelton and will follow with another early in July. The Bethlehem Steel Co. is about to put in an additional stack.

In the duplex process, the pig metal is first blown in the Bessemer converter and all the silicon and a considerable part of the carbon removed. The process is then completed in the open-hearth furnace, the length of the heat depending upon the analysis of the steel specified. By this method, steel output of given capacity is increased from two to three times over the production of Bessemer converters or open-hearth furnaces operated as single processes.

Will Greatly Enlarge Lima Plant

A large extension of the plant of the Lima Locomotive & Machine Co., Lima, O., has been financed by the sale of $2,000,000 first mortgage, 6 per cent, 20 year sinking fund bonds to Redmond & Co., of New York. A new corporation known as the Lima Locomotive Corporation has been organized to take over the plant and carry out the improvements. The company originally manufactured only geared locomotives, but for the past ten years, it has been extending its operations into the locomotive field. It controls a tract of 43 acres at Lima and upon this it is proposed to erect additional buildings, making a total capacity of 900 to 1,000 locomotives annually. Merle Middletown has been named as chairman of the board. A. L. White is president.

IMPORTANT EXTENSIONS

Planned for Bethlehem, Including Another Blast Furnace.

Extensive enlargements and improvements to the works of the Bethlehem Steel Co., South Bethlehem, Pa., are in contemplation, but matters have not yet developed to the point that will permit an official statement. Plans and specifications, however, have been prepared for the erection of an additional blast furnace of the maximum capacity type, which will increase the present group to seven furnaces. No contracts for this construction have yet been placed. The improvements to the Bethlehem plant will be financed out of the proceeds of the recent issue of $50,000,000 of bonds, which was authorized by the directors of the company.

Form Aluminum Company

The North Carolina Electric & Power Co., of New York, which succeeded the Whitney, N. C., company after the latter had expended about $1,000,000 for the partial construction of a hydro-electric plant on the Yadkin river, has accepted a proposition of French capitalists to buy the uncompleted construction and a portion of the lands, etc. These capitalists intend to utilize their purchase by building a big plant for the manufacture of aluminum and they will organize the Southern Aluminum Co., with a capital stock of $8,000,000, to undertake the new enterprise.

Increase Equipment

The heavy ore tonnage being handled by the Great Northern railway into its Allouez Bay docks has caused a shortage in ore cars, and additional equipment has been brought from the Montana Central railway, a Great Northern subsidiary. These cars have been used for hauling copper ore from the western mines to the smelters and are slightly different in construction than the iron ore cars, but have hopper bottoms and are easily adaptable to the iron traffic.

The Dominion of Canada paid bounties for three months of last year, amounting to $300,000 on steel, lead, petroleum, etc.

SUIT FILED

By Promoter of Western Steel Corporation Against Trust Co.

Seattle, June 17.—James A Moore, who promoted the Western Steel Corporation, has filed suit against the Metropolitan Trust Co., of New York, and others, to recover the plant of the Western Steel Corporation and all its extensive ore and timber holdings and $1,000,000 damages. He charges the defendants with conspiring to bankrupt him and his company, at the direction of the United States Steel Corporation, which found the competition of the Western Steel Corporation in Puget Sound distasteful.

The story of the alleged conspiracy and how the Metropolitan Trust Co. proceeded to take over the Western Steel Corporation for $720,000, said to be the amount due the trust company for money it had lent to Moore, is told in the complaint, filed in the United States District Court on Moore's behalf.

The Metropolitan Trust Co., the Western Steel Corporation, Harry Bevan, of Irondale, Wash., where the Western Steel Corporation has its plant; the Port Townsend Pile Driving Co., of Port Townsend, Wash.; M. Barde, J. N. Barde and L. B. Barde, of Portland, Ore., and John Doe, of Tacoma, are named as defendants.

Judge Lester Still appointed R. McClelland, of Port Townsend, temporary receiver yesterday, without notice, of all the properties which the Metropolitan Trust Co. acquired when the referee in bankruptcy sold the assets of the Western Steel Corporation on March 19. Mr. McClelland will take possession immediately.

Haley Fiske, a director of the Metropolitan Trust Co., when asked about the suit of Moore, said at his home in Bernardsville, N. J., that the conspiracy charge against the trust company by James A. Moore, ex-president of the Western Steel Company, possessed not the remotest foundation in fact. The United States Steel Corporation had not the faintest connection with the trust company's action, he declared.

"It was just a plain, commercial transaction," he said. "Moore and the Western Steel Company owed us money. We sued them for payment and they went into bankruptcy. The court ordered the steel company sold and we bought it in."

Neither Mr. Fiske nor the other directors and officers of the trust company had received formal notice of the filing of Moore's suit.

SLIGHT CONCESSION

On Bessemer Pig Iron—Additional Car Orders.

Pittsburgh, June 19. (By wire.) — Some sales of Bessemer in small lots are reported at a concession of the nominal price of $14.25. One sale was made around $14.15 today.

Coke is scarce and by many is considered strong, though the average price is below the price demanded by the large producers.

The Cambria Steel Co. has broken its plate production for three successive months and is now behind on deliveries.

The New Jersey Central Railroad has placed an order for 1,000 steel gondolas, 500 with the Standard Steel Car and 500 with the American Car & Foundry Co. The Philadelphia & Reading Railroad has placed an order for 500 steel gondolas with the Cambria Steel Co.

There is an improvement in both bar and wire products in the east. Wire is still weak, but there has been a better buying movement during the past week.

Will Make Coke

The incorporation of the Kentucky Solvay Coke Co. was announced in The Daily Iron Trade Review some weeks ago. At the organization meeting of the company held at Ashland, Ky., the following directors were elected: John Russell, W. B. Seaton, W. G. Eaton, R. G. Hazard, F. R. Hazard, H. H. S. Handy, E. L. Pierce, E. C. Witherby and J. G. Hazard.

The officers elected were: President, R. G. Hazard; vice president and general manager, E. C. Witherby; secretary and treasurer, J. G. Hazard; assistant treasurer, M. D. Whitford.

This company has been formed for the purpose of manufacturing coke and its by-products from the coals of eastern Kentucky. The undertaking is largely the result of the enterprise of W. G. Eaton, of Cincinnati, who has given much study to the production of coke from eastern Kentucky coals. During his investigations he visited most of the leading coking plants of the country, comparing the different systems and their application to the needs of the undertaking. About 50 acres on the Ohio river, just outside of the city of Ashland, have been secured for the location. The plant will consist of about 50 of the modern type of Semet-Solvay ovens. These ovens have a capacity of about 20 tons of coal each per day. This gives the entire plant a capacity of about 1,000 tons per day.

Messrs. Eaton, Rhodes & Co., of Cincinati, have been appointed sales agents for the coke, which will be sold for furnace, foundry and domestic use. The construction will be pushed forward as rapidly as possible, and it is expected that the plant will be ready for operation the early part of next year.

WAGE QUESTION

Being Considered by Amalgamated Delegates and Manufacturers.

The Amalgamated Association of Iron, Steel and Tin Workers and the Western Bar Iron Manufacturers' Association are holding their annual meeting in Buffalo. President John W. Williams, of the Amalgamated association, says that an advance of 5 per cent in wages, to go into effect with the new schedule, July 1, the date the present schedule expires, is to be asked for from the Manufacturers' association. Officers of the latter, who are present at the meeting, include President, S. C. Leonard, Detroit; vice president, George M. Clark, Louisville, Ky.; secretary-treasurer, James H. Nutt, Youngstown, O.

HIGHER PRICES

For Finished Material in Eastern Market.

New York, June 19. (By wire.)—The gradual strengthening of finished material prices continues. Bessemer steel bars have been sold for last quarter at 1.25c. One large maker on an inquiry for 3,000 tons of plates and shapes, quoted 1.27½c, Pittsburgh. Sales of bridge material have been made for Canadian shipment at 1.25c, Pittsburgh.

W. B. Franklin, who has been acting in the capacity of western sales manager for the United States Cast Iron Pipe & Foundry Co., with headquarters at Chicago, has been appointed general sales manager, the appointment taking effect June 15. A. J. Goodhue, formerly in charge of the Chicago office, who has been incapacitated for some time by severe illness, will succeed Mr. Franklin as western sales manager.

The headquarters of the American Society of Heating and Ventilating Engineers' convention in Detroit, Mich., on July 11 and 12 will be at the Hotel Tuller.

DECLINING STOCKS

Shown in Pig Iron—Middle West Drops Heavily in Year.

Pig iron stocks in different producing districts continue to show a substantial decline. Reports from the Pittsburgh, valley, Ohio river and nearby territory show that iron on steel works and furnace banks, not including that of the plants of the United States Steel Corporation in these districts, show a reduction of 15,000 tons during the first half of June. This leaves the total of all grades in the territory at a little over 550,000 tons. This is a reduction of practically 300,000 tons from the total of stocks in this district on the corresponding date a year ago. Reports from other producing centers show uniformly that stocks are still declining despite the largely increased output.

German Steel Works Busy

The recent speech in the Herrenhaus of Mr. Gwinner, the chairman of the Deutsche Bank, has been interpreted in Germany as indicating a probable early trade reaction. This view is apparently not shared by the newly-constituted German steel syndicate, for it has announced an advance of 5 marks per ton for half-finished products. Trade conditions continue exceedingly active and strong, both for semi-finished and manufactured products. Works are much in arrears with old contracts, and the price of shapes has been raised 250 marks, with all discounts cancelled. German steel works are indeed, as a rule, flooded with orders, and have but little to sell for months ahead. This has enabled Belgian producers to raise their prices. The foreign trade iron and steel returns for the first four months of this year show, compared with last year, imports 213,596 tons, an increase of 26,599 tons, and exports 1,926,473 tons, an increase of 254,486 tons, the excess of exports being thus 1,712,877 tons. The excess to April 30, 1910, was 1,458,391 tons.—*Yorkshire Post.*

Installing Turbo Blowers

The Woodward Iron Co., Woodward, Ala., has closed with the General Electric Co. for the installation of three centrifugal turbo blowing units at its blast furnace plant with a capacity of about 40,000 cubic feet per minute. The Chattanooga Iron & Coal Co., Chattanooga, Tenn., is also installing a turbo blowing unit of the General Electric type.

Progress on Steel Corporation's Duluth Plant

New Works of the Minnesota Steel Co. About Half Completed and Will Be Operated Late In 1913

Work on the new plant of the Minnesota Steel Co., a subsidiary of the United States Steel Corporation, at Duluth, Minn., has been going forward steadily during the past year and was only temporarily delayed by the most severe weather in the winter. The plant is now approximately 50 per cent completed and will be ready to roll steel, it is believed, in the latter part of 1913. The general arrangement of the works and layout of the various mills were described in THE IRON TRADE REVIEW, March 16, 1911, and Feb. 8, 1912. The latter article completely covered the roll layouts, arrangement of machinery, motor drives, etc.

The accompanying illustrations show the stage of construction which had been reached at the close of May, 1912. Fig. 1 shows the plate work of the blast furnace stoves in the course of erection with the foundation for blast furnace No. 1 in the background. At the right in the rear, is the open-hearth building with the mixer house and open-hearth stock house in frame. At the present time, about nine rings of plates on the blast furnace stoves are erected and rapid progress is being made. Also the columns and mantle for furnace No. 2 are completely erected and the mantle for furnace No. 1 is being finished in the machine shop. The plate work and erection of the stoves and blast furnaces is being done by the Pennsylvania Engineering Co., New Castle, Pa.

Blast Furnaces

The two blast furnaces will have a capacity of approximately 450 tons per day each. They are placed 360 feet apart on the north side of the mill property and the stoves extend in a line between them, there being five stoves for each furnace. The furnace will be 125 feet high and 26 feet in diameter at the boshes and the stoves will be 140 feet high, including the stack.

The foundations for the furnace stock bins are completed, as are the foundations for the first battery of 92 by-product coke ovens. The chimney for the coke ovens, which is reinforced concrete 200 feet high and 18 feet inside diameter at the base, was completed on June 4. The coke oven pusher foundations are also finished and the two outer walls, carrying the track, are tied together by a series of 2-inch steel rods which will effectually prevent the rails from spreading.

The open-hearth building will contain seven 60-ton stationary furnaces. Each furnace is provided with a 176-foot reinforced concrete chimney, as shown in Fig. 1. This is a rather novel feature and is said to be the only plant in the country provided with concrete chimneys for the open-hearth furnaces. The chimneys are being built by the M. W. Kellogg Co., New York. They are to be finished with a coat of white cement paint, which has the appearance of first class white paint and the consistency and properties of cement.

An interior view of the open-hearth stock house is shown in Fig. 2. All the steel work in this building has been completed and the erection of the walls and platform will commence shortly. The platform shown at the right in the illustration carries a track which connects with the yard tracks by an inclined trestle; it also has direct connection with the open-hearth charging floor. The open-hearth charging boxes will be filled on the platform of the stock house. The raw material for the charges will enter the building at the ground level, on the track shown

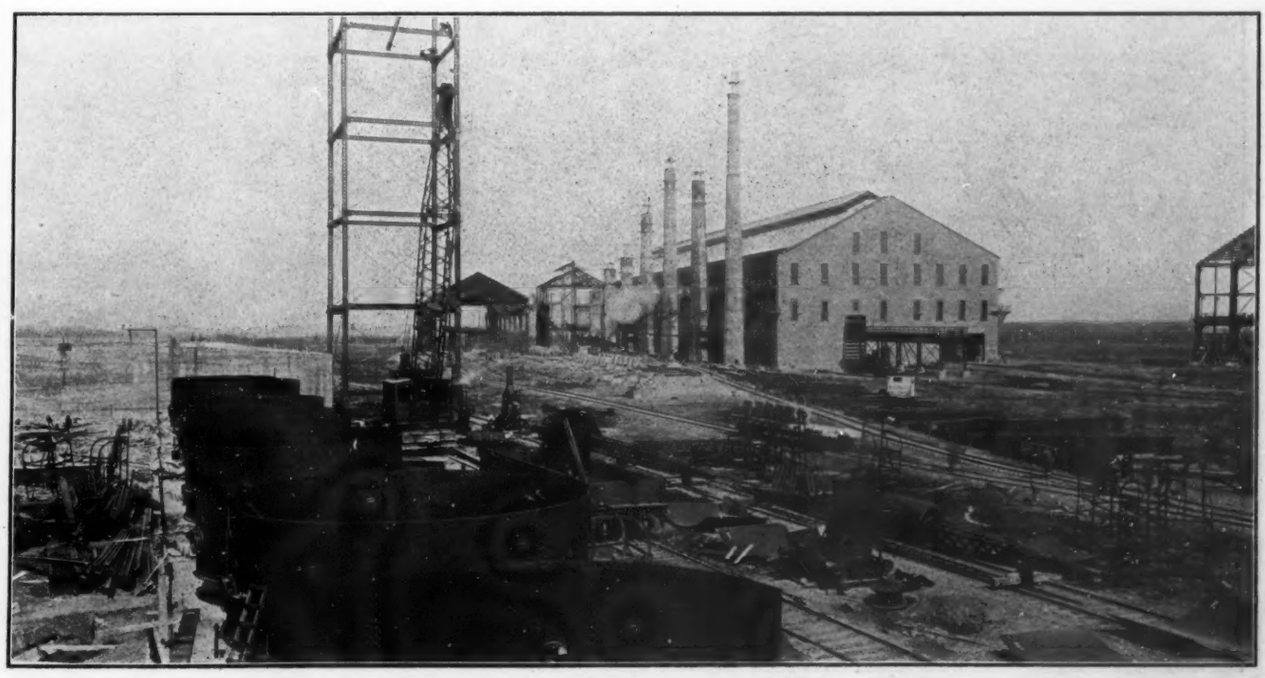


FIG. 1—THE HOT BLAST STOVES UNDER CONSTRUCTION ARE SHOWN IN THE FOREGROUND AND THE OPEN-HEARTH BUILDING WITH ITS CONCRETE STACKS IS IN THE BACKGROUND

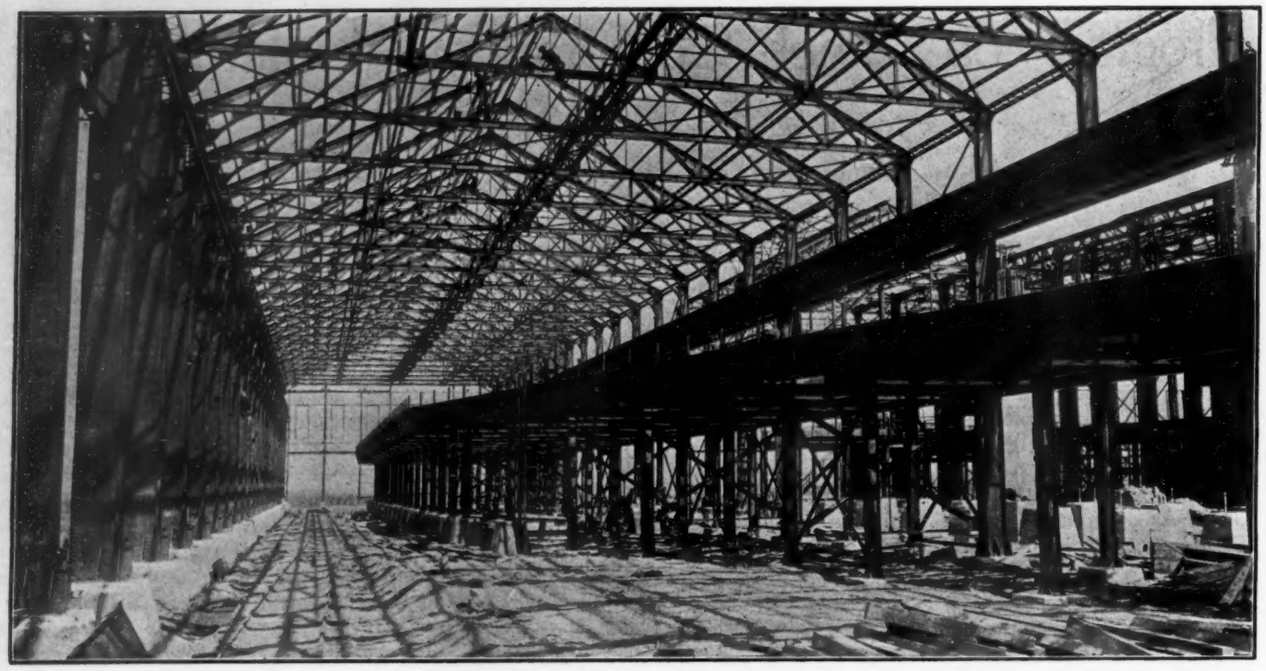


FIG. 2—OPEN-HEARTH STOCK HOUSE, SHOWING THE LOADING PLATFORM

at the left in Fig. 4, and will be transferred to the platform by cranes.

The open-hearth building is practically completed and the foundations for the seven furnaces, valves, gas connections and gas producers are finished. The steel work of the furnace platform is erected, but the floor is not laid. The charging platform will be of reinforced concrete construction supported on steel beams. In the open-hearth building, a novel four-girder 100-ton Morgan crane has been installed on the charging side and a 150-ton Morgan ladle crane will be installed on the pouring side. These cranes are among the largest and most complete ever built for the purpose. The ingot pouring platforms are provided with escape galleries situated outside the building so that the men can quickly reach a place of safety in case of accident.

Fig. 3 shows the general arrangement of the stripping, soaking pit and blooming mill buildings, on which the steel work is nearing completion, with the open-hearth building in the background. The ingot stripper, instead of being open to the weather as usually constructed, will be completely enclosed. Work on the walls and roofs of the buildings, shown in Fig. 3, is now under way. Four pit furnaces, each containing four pits, will be installed, and all the foundation work, together with the gas producer foun-

FIG. 3—GENERAL VIEW OF THE PLANT LOOKING NORTH, SHOWING THE RAIL AND BLOOMING MILLS AND THE SOAKING PITS AT THE RIGHT, WITH THE OPEN-HEARTH BUILDING AT THE LEFT

FIG. 4—INTERIOR OF SOAKING PIT BUILDING LOOKING SOUTH, SHOWING THE PIT FOUNDATIONS AND THE BLOOMING MILL IN THE BACKGROUND

dations, are finished. The ingot car track in front of the pit furnaces is laid on built up I-beams thoroughly embedded in concrete and frequently tied together with cross rods, constituting an unusually permanent form of construction.

Erection of the pit furnaces has already commenced, as shown in Fig. 4. This illustration also gives a clear idea of the general layout of the soaking pits and shows the blooming mill and rail mill in the background. A Morgan vertical ingot charging crane is already installed in the soaking pit building.

The foundations for the 40-inch two-high reversing blooming mill, together with its tables, are shown in Fig. 5. This mill will be driven by a two-cylinder high-pressure reversing engine which will be placed in an adjacent building. The engine foundations are shown at *E*, Fig. 5.

All the steel work in the main rail mill building is erected and work is in progress on the walls; the erection of the rail finishing and auxiliary buildings of similar character will commence shortly. All foundation work for machinery in the rail mill, rail finishing and transfer buildings is completed and foundations for the continuous heating furnaces are laid. The merchant mill building is completed, but machinery foundations have not been placed; work on foundations in the motor house, however, is under way.

Some additional equipment, including six large engine lathes, has been installed in the machine shop and

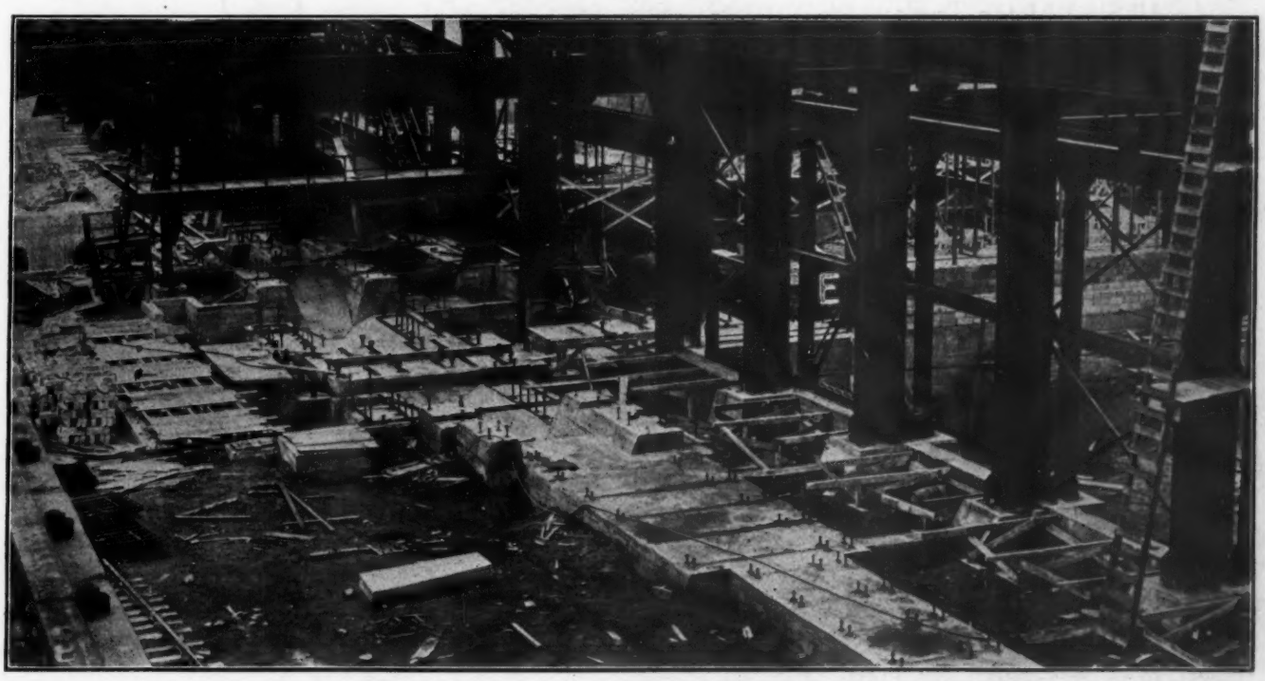


FIG. 5—FOUNDATIONS FOR THE 40-INCH BLOOMING MILL, TABLES AND ENGINE

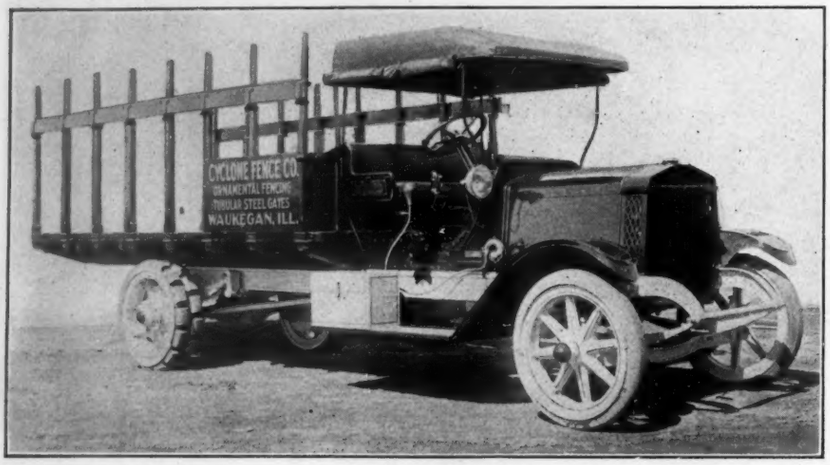


FIG. 1—SMITH TRUCK USED FOR HAULING WIRE PRODUCTS

new tools, including a riveting machine, have been installed in the plate shop.

The American Bridge Co. is fabricating and erecting the steel work in the buildings, but the small work on the open-hearth furnaces, etc., is being handled direct by the Minnesota Steel Co. and fabricated in its own shops at the plant. The fabrication of the buck stays for the open-hearth furnaces is now under way. In the machine shop, the mantle for blast furnace No. 1 is being finished, the open-hearth gas valves are being machined and considerable miscellaneous work is in progress. For the convenience of its employes who have charge of the construction, several dwelling houses have been built at the plant.

An All-Steel Motor Truck

The A. O. Smith Co., Milwaukee, recently perfected a new motor truck especially suitable for carrying heavy, bulky material or iron and steel beams. The machine is built entirely of steel and is equipped with a worm gear drive.

The wheels are cast steel with U-section spokes built integral with the hubs and brake drums. The wheels are lighter than wooden wheels of similar strength and are made to conform to the standard dimensions as regards diameter, felloe width and thickness prescribed by the Society of Automobile Engineers. The frame is built entirely of pressed steel with special beaded side rails. A combination drop-forged, cross bar and rear spring hanger takes all of the torsion due to the spring overhang. A special demountable, three-point suspension engine subframe is provided.

The radiator is composed of vertical copper tubes with upper and lower tanks of cast aluminum. The tubes are removable and each tube may be independently soldered. The radiator is mounted on the engine subframe.

The motor is a 36-horsepower, 4-cylinder vertical Continental engine expressly designed for truck service. The cylinders are 4½ inches bore by 5½ inches stroke, water-cooled, cast in pairs with the valves all on one side. The engine is located under a bonnet in front of the driver's seat. The ignition is by means of Bosch magneto and an entirely independent auxiliary battery system, equipped with a four-coil master vibrator and an independent set of spark plugs. The gasoline tank is located under the driver's seat and has a capacity of 20 gallons. The engine is lubricated by oil circulation pumps, sight feeds being provided on the dashboard together with an oil level gage on the motor. The crank case is lubricated by a splash system.

A selective individual clutch type transmission with gears constantly in mesh is provided. It has three speeds forward and one reverse. The gears are of the herring-bone or double spiral type, the teeth being cut by the hobbing process for a single blank. The gears have a 3-inch face and the gear shafts are mounted on ball bearings. The transmission is located in the center of the car and like the rear axle, may be easily removed from its place without disturbing the other units.

The rear axle housing, torsion tube and transmission housing are made up in one integral unit which takes up all the shocks and transmits the motion from the wheels to the frame. The rear axle is of the floating type with worm gear drive. Both the emergency and service brakes are applied direct to the rear wheels and are independently adjustable by large individual wing nuts at the rear of the axle.

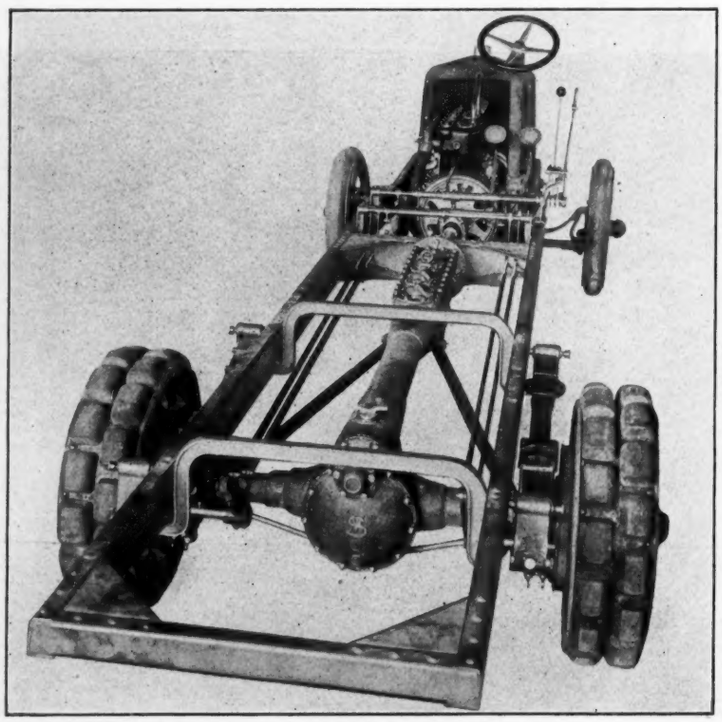


FIG. 2—CHASSIS OF SMITH ALL-STEEL TRUCK

The Rockwell Furnace Co., New York City, has established an office in the Engineers' building, Cleveland, for the sale of heat-treating, annealing, tempering and melting furnaces. This office will be in charge of George B. Norcross, who will have associated with him Walter F. Johnson, formerly assistant treasurer of the King Bridge Co., Cleveland, and E. W. Saunders, formerly of the Carbon Steel Co., Pittsburgh.

An Open-Hearth Furnace of a Detachable Type

Steel and High Grade Iron for Castings are Poured Direct From the Melting Chamber Into the Molds—Stacked Castings

OPEN-HEARTH furnaces of the standard type, of as small capacity as only 15 tons per heat, are not adapted to the requirements of the average foundry engaging in steel casting work. It is well known that an open-hearth unit cannot be operated economically except on a continuous basis, as the repeated heating and cooling of the lining and roof, when only one heat per day is made, results in a large increase in the cost of repairs. On the other hand, if the furnace continues to be heated after the day's melt to maintain it in readiness for the next day's operations, the cost of fuel becomes excessive and the expense of producing the castings is increased proportionately thereby. Many foundrymen operating gray iron shops have installed steel departments to meet the demands of their trade and the average steel casting output of such plants rarely exceeds a few tons a day. As the standard type of open-hearth furnace is not adaptable to these requirements, converters have been added to the equipment of these shops, and during the past few years a large number of such installations have been made. The converter can be operated economically in the production of small heats of steel and possesses many advantages for the foundry having a limited output as compared with the smallest size standard open-hearth.

W. M. Carr, author of *Open-Hearth Steel Castings,* for more than five years has been engaged in the development of a small open-hearth furnace in which heats varying from 2,000 to 4,000 pounds could be made and which would be adapted to the needs of the steel foundry of limited output. Nearly three years ago he built a fuel oil open-hearth furnace of small capacity which was exceedingly original in design. The melting chamber was cylindrical in form and was entirely separable from the ports. To avoid the trouble with slag when lip-pouring, the furnace was fitted with a nozzle and stopper operated through the charging door, which was set in place long enough before tapping to permit of heating the stopper fittings. The furnace was so constructed that it could be carried to the molds and could be used as a combined melting medium and pouring ladle.

During the past few years this type of furnace has been developed further and is now on a practical commercial operating basis. Three of these small open-hearth furnaces have been installed in the plant of the Alloy Steel Casting Co., Glenova, Wheeling, W. Va., of which Mr. Carr is general manager. The three furnaces in this plant, two of which are shown in Fig. 1, are of one and two tons capacity, as against 500 pounds per heat, the capacity of the original, experimental furnace. Castings varying in weight from one ounce to several thousand pounds are being made for the automobile and general machinery trades. The parts are being cast of both standard and alloyed open-hearth metals

This type of furnace is designed and constructed on the principle of securing on a small scale all of the advantages of the standard open-hearth furnace of larger capacity. It is well known that a small volume of steel produced by the open-hearth process involves some risk in chilling, thereby causing some misruns of light, thin sections. This would occur if a ladle were used to transfer the metal from the furnace to the molds. The use of a ladle, therefore, has been dispensed with and the metal is poured direct from the melting chamber into the molds. At tapping time, the melting chamber is lifted away from its ports by a crane and is conveyed to the pouring floor. The

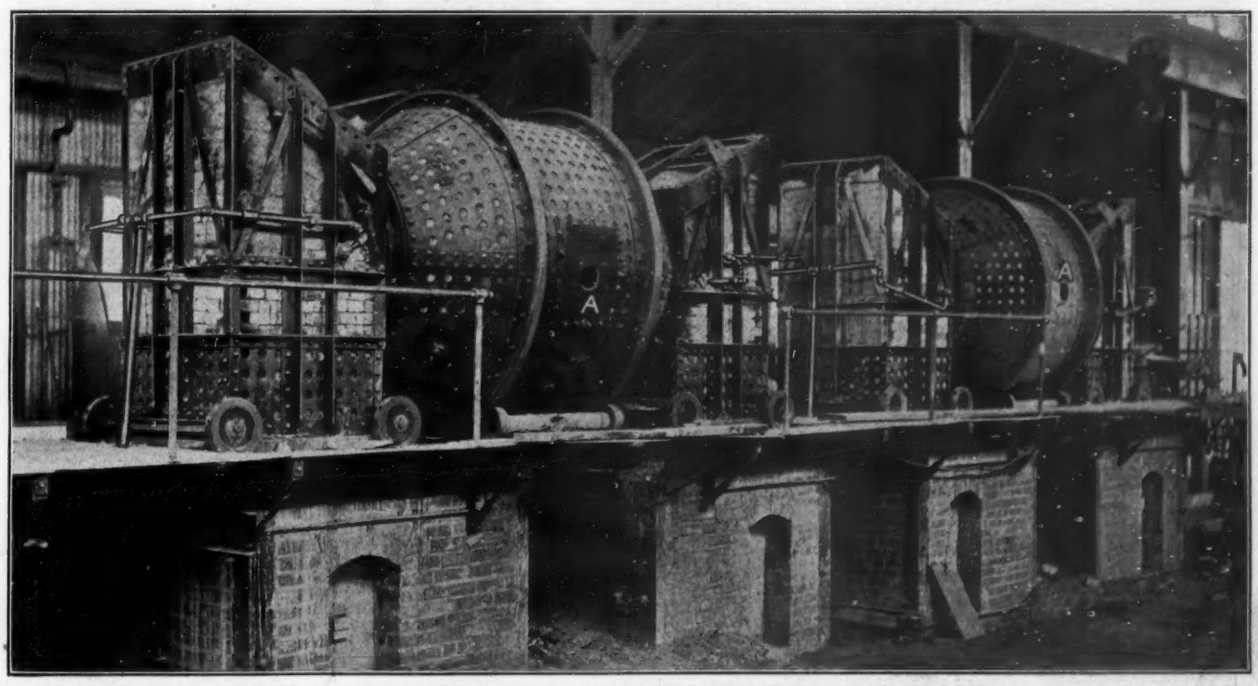


FIG. 1—THE CARR DETACHABLE OPEN-HEARTH FURNACES IN THE PLANT OF THE ALLOY STEEL CASTING CO.

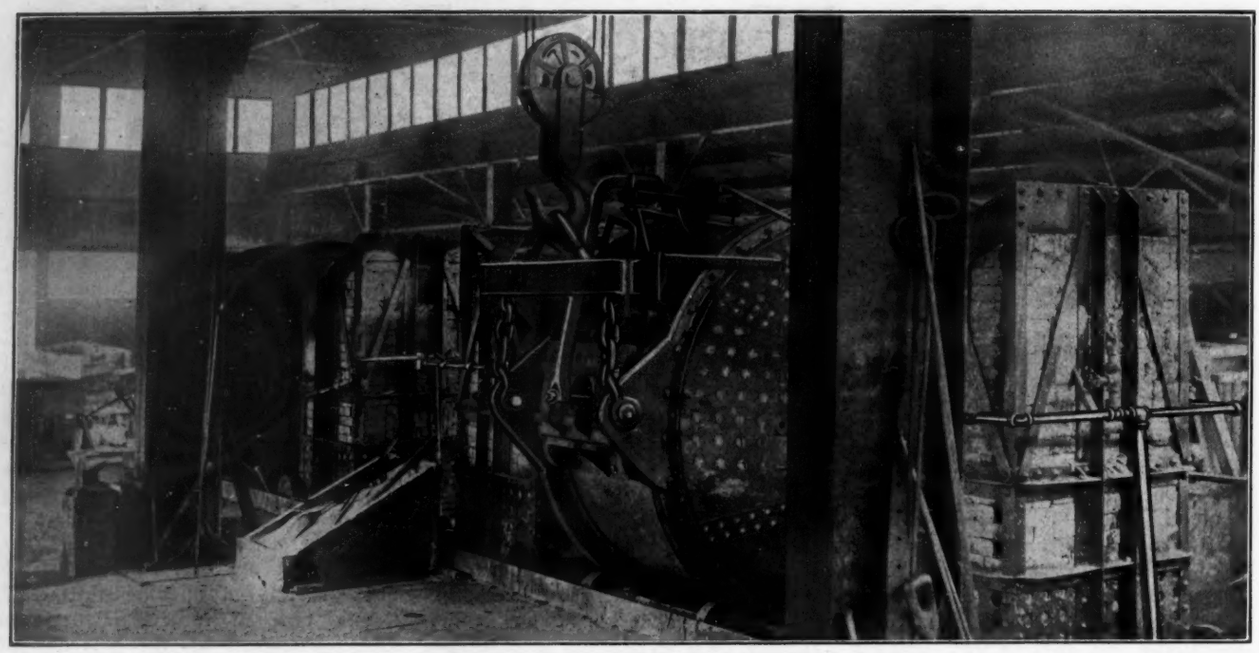


FIG. 2—PREPARING TO LIFT AWAY AND ROLL-OVER THE MELTING CHAMBER FOR POURING THE MOLDS

flow of the metal is controlled by a nozzle and stopper fittings fixed in position shortly before pouring. By this method the initial temperature of the metal is preserved and small castings can be poured which heretofore have been considered impossible to cast by the ordinary open-hearth process.

The metal produced is exceedingly uniform in quality and for this reason and due to the high casting temperature, the furnace can be employed for making tool steels of crucible compositions. As the volume of steel is small, the ferro-alloy additions can be distributed uniformly throughout the entire bath of metal. The melting chamber being detachable, practically no time is lost in making repairs or relining, spare lined shells being kept on hand for immediate substitution. The time thus saved is a distinct advantage over the standard type of open-hearth furnace which must remain in idleness throughout the entire period of general repairs. In addition, the cylindrical construction of the melting chamber and its comparatively small size permits of obtaining a hotter metal than that procurable by the ordinary open-hearth process, which is at a temperature of approximately 1,500 degrees Cent. when tapped into the ladle. In this furnace, the temperature of the steel, obtained by pyrometer measurements, is 1,600 degrees Cent. at pouring

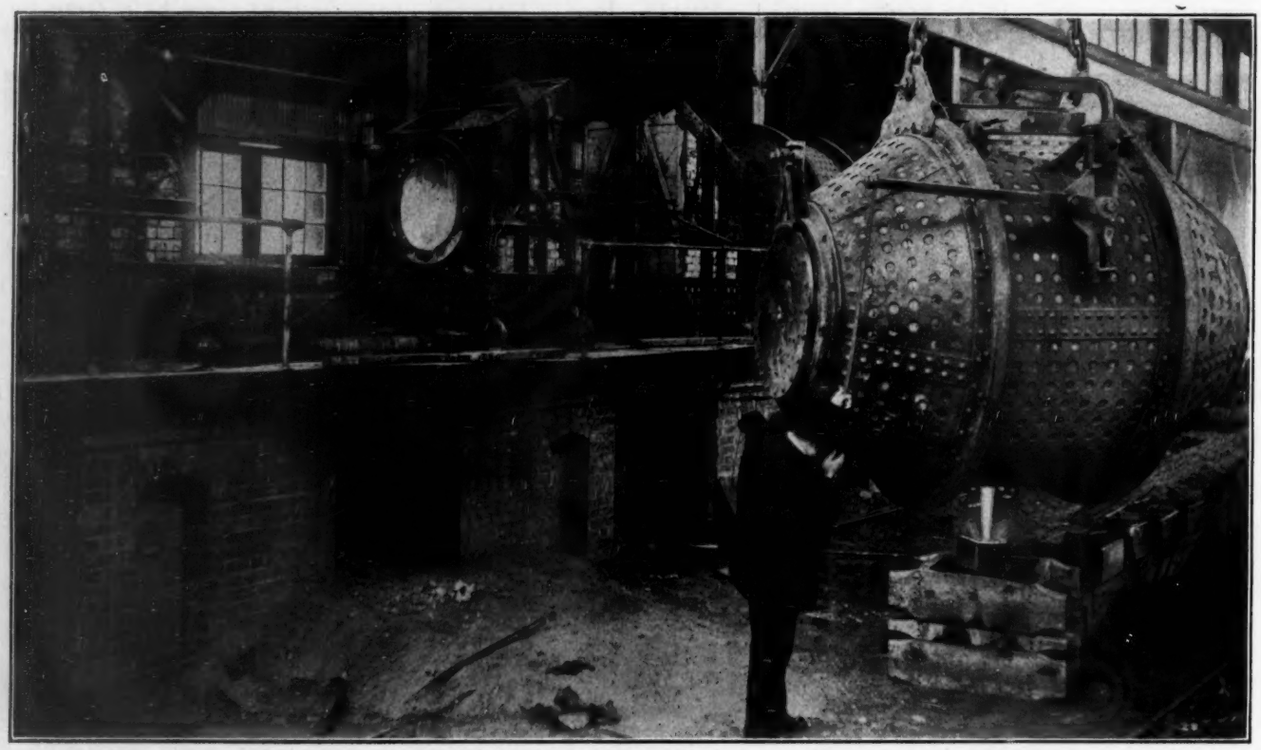


FIG. 3—THE MELTING CHAMBER USED AS A LADLE AND IN POSITION POURING A MOLD

FIG. 4—A GENERAL VIEW OF THE ALLOY STEEL CASTING CO.'S FOUNDRY, SHOWING THE MELTING CHAMBER EMPLOYED AS A LADLE AT THE EXTREME END OF THE POURING FLOOR

time and is practically at this temperature when entering the molds, there being no loss of heat as would be the case if the steel were first poured into a ladle.

These furnaces also are employed for melting iron and the metal is exceedingly close-grained, tough and possesses wonderful malleable properties. This product is termed Carr's vanadium iron, and its process of manufacture will be described later in this article. Plan, rear and side elevations of one of these small furnaces is illustrated in Fig. 16. Two regenerative chambers are provided similar in design to those employed for an open-hearth unit of larger size. The burner ports are mounted on wheels and operate on a track, being set directly over the regenerators when the furnace is in operation. Fig. 1 shows two of the furnaces in melting position, the tap holes being indicated at *A*. It also will be noted that the melting chambers are mounted on rollers to permit of rolling-over the furnace when the crane picks it up to convey it to the pouring floor. In Fig. 1 the four regenerative chambers, two for each furnace, are clearly illustrated. As natural gas is available in abundance in the Wheeling district, it is used for fuel, although fuel oil also can be employed. The burners enter

FIG. 5—METHOD OF STACKING SNAP FLASK MOLDS

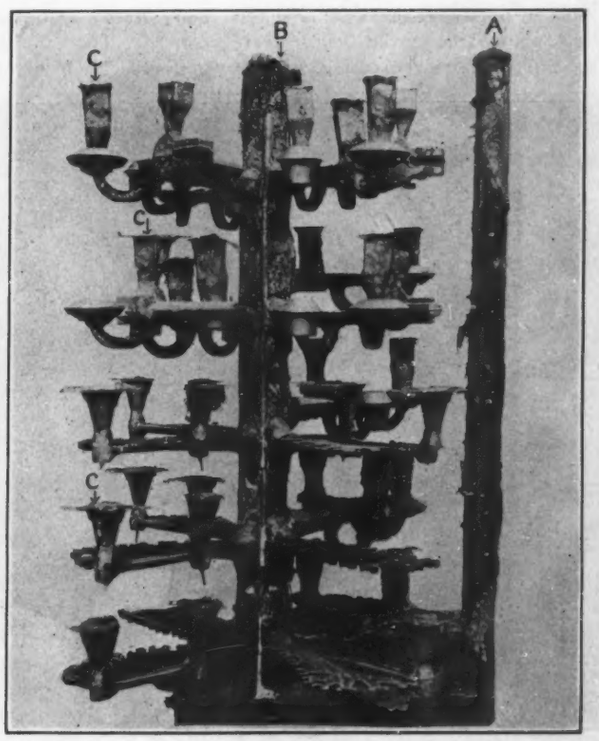


FIG. 6—A STACK CONTAINING 121 STEEL CASTINGS

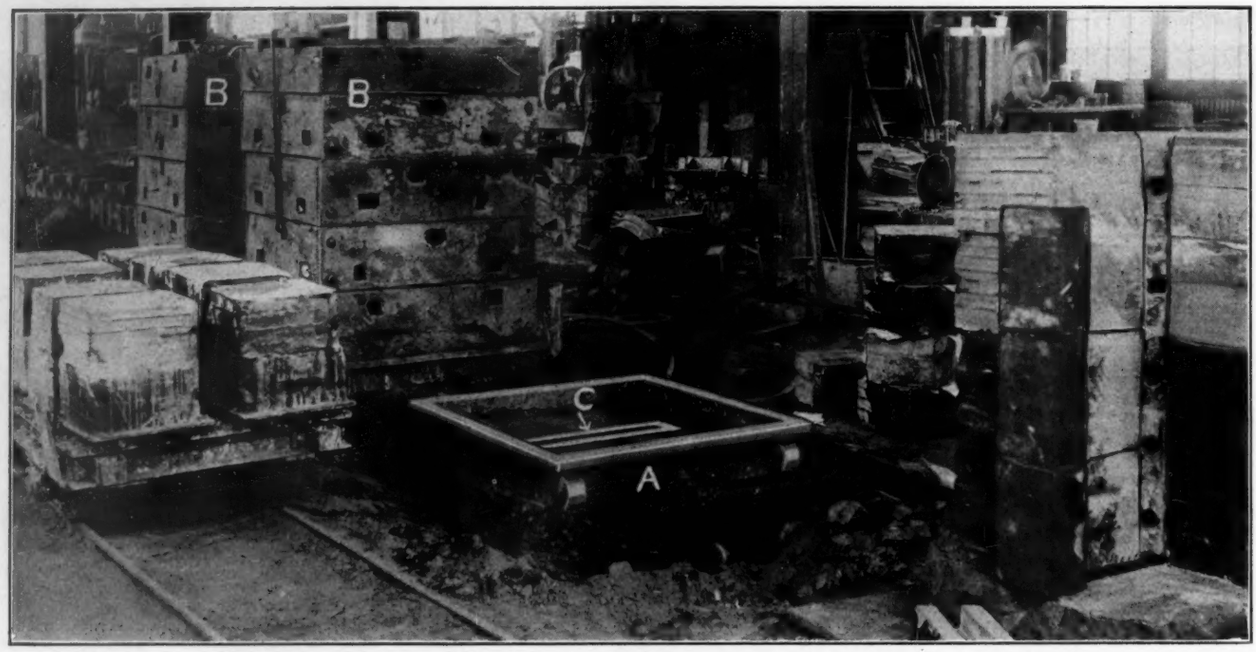


FIG. 7—TWO OF THE STACKS READY FOR POURING ARE SHOWN AT *B*

the ports from the front and back and the burning gas is deflected by a bridge wall in the burner port into the melting chamber. The inclined roof of the burner port also serves to deflect the gas onto the metal bath. The ports are lined with silica brick and are of self-contained construction, the framework being rigidly built of steel angles and plates.

The melting chamber is cylindrical with truncated cones at either end which connect with the openings in the burner ports. The shell is made of steel plates, the cover being riveted to the cylindrical section of the shell. The perforations in the shell serve to reduce not only the weight of the furnace, but also radiate the heat from the lining, keeping it cool on the outside and lengthening its life. The furnace is practically without a roof, although that section of the lining above the metal bath is so indicated. No bricks are used for lining, but instead a gannister lining is rammed in position inside of the shell of the body and cones. Three forms are employed for making the body lining and four for each of the cones. This continuous lining is preferred to brick, remaining in position when the melting chamber is rolled over for pouring and the cost of repairs is small as compared with the expense of a brick lining in a furnace of this type. The melting chamber is 7 feet long and the main body is 3 feet, 6 inches in diameter inside of the lining. When lining a shell a man enters the chamber through the charging door through which the forms also are passed, and rams the gannister between the forms and the shell. Either an acid or basic lining can be employed, although these furnaces are lined for the production of acid steel. By maintaining a number of spare, lined shells, the change from acid to basic, and vice versa, can be made by merely substituting an acid or basic lined shell for the one in position. The operation merely consists of lifting out the melting chamber by a crane and replacing it with the one required, lined for the class of steel to be made.

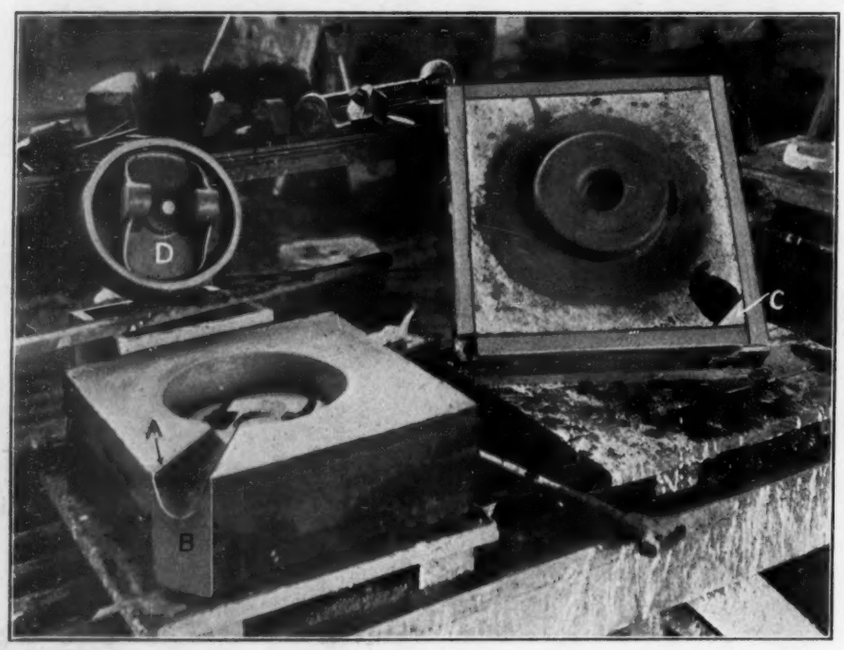


FIG. 8—DRAG AND COPE OF SNAP FLASK MOLD, SHOWING CORNER GATE AT *A*

The increase in temperature of practically 100 degrees Cent. in a cylindrical furnace of this type, over that obtainable in an ordinary open-hearth furnace is due to the fact that the radiating effect per square inch of heating surface is greater than in a rectangular furnace of large size. As the intensity of radiation varies inversely with the square of the distance, it becomes evident that there are heavy losses in the radiated heat from the sides and corners of a rectangular furnace where the sides join the roof. This loss in radiation occurs at a point in each side of the furnace where the circumference of

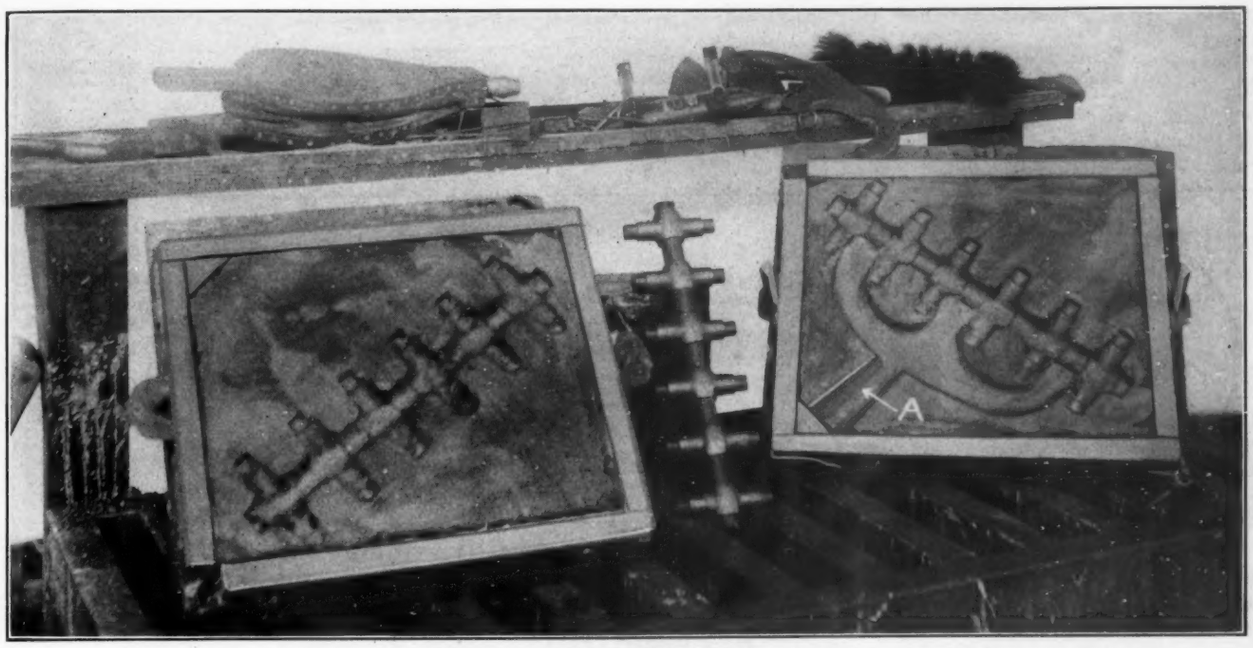


FIG. 9—COPE AND DRAG OF MOLD, SHOWING ARRANGEMENT OF CORNER SPRUE AND GATE

a circle, struck with a radius from the center of the bath, contacts with the sides and the loss in radiated heat increases toward the top of the furnace, being greatest at the points where the sides join the roof. On the other hand, no such losses in radiation can occur in a cylindrical furnace, and consequently, the entire effect of the radiated heat is obtained, thereby reducing the melting period to only 3½ hours as compared with 7½ to 12 hours required in large open-hearth furnaces of the rectangular type. This results, furthermore, in an increased temperature of the metal at the pouring period. The depth of the bath in the cylindrical furnace, in proportion to the area of the surface of the metal, is much greater than that of a large, rectangular furnace in which the bath of metal is spread over a large area. A deep bath in open-hearth steel operations is the ideal condition sought, as it hastens the refining reactions and aids in reducing the time required for making a heat. Only a small percentage of ore is employed and the reactions are not hastened so as to give the oxides an opportunity of burning out. This results in an exceedingly homogeneous product free from blow-holes and the losses resulting from occluded gases are unusually small when compared with ordinary steel foundry operations.

A peculiarity of the steel made in these furnaces is the fact that a high phosphorus content does not affect the quality of the product. The percentage of phosphorus in the castings ordinarily made runs as high as 0.09 and their physical properties are practically the same as those of other grades of acid steel. The metal is exceptionally tough and can be bent flat when cold without fracture. The analyses of the acid steel castings now regularly made from metal refined in these cylindrical furnaces, range as follows: Carbon, 0.25 to 0.30 per cent; silicon, 0.30 to 0.40 per cent; phosphorus, 0.04 to 0.09 per cent; sulphur, 0.03 to 0.04 per cent, and manganese, 0.5 to 0.7 per cent.

As the pouring interval of a furnace rarely exceeds 15 minutes, the quality of the steel at the end of the pour is practically the same as at the beginning. One of the difficulties experienced with large open-hearth units in steel foundry practice is the difference in the quality of the metal at the beginning and the end of the pouring interval. The quality of the metal last tapped from the furnace, is usually inferior to that tapped into the first ladle, and, although various expedients have been sought to overcome this difficulty, it persists in many plants and is the cause of heavy losses. At the beginning and the end of the pouring interval there is practically no change in the quality of the steel poured from one of these small open-hearths. The following analyses are

FIG. 10—SAMPLES OF LIGHT STEEL CASTINGS

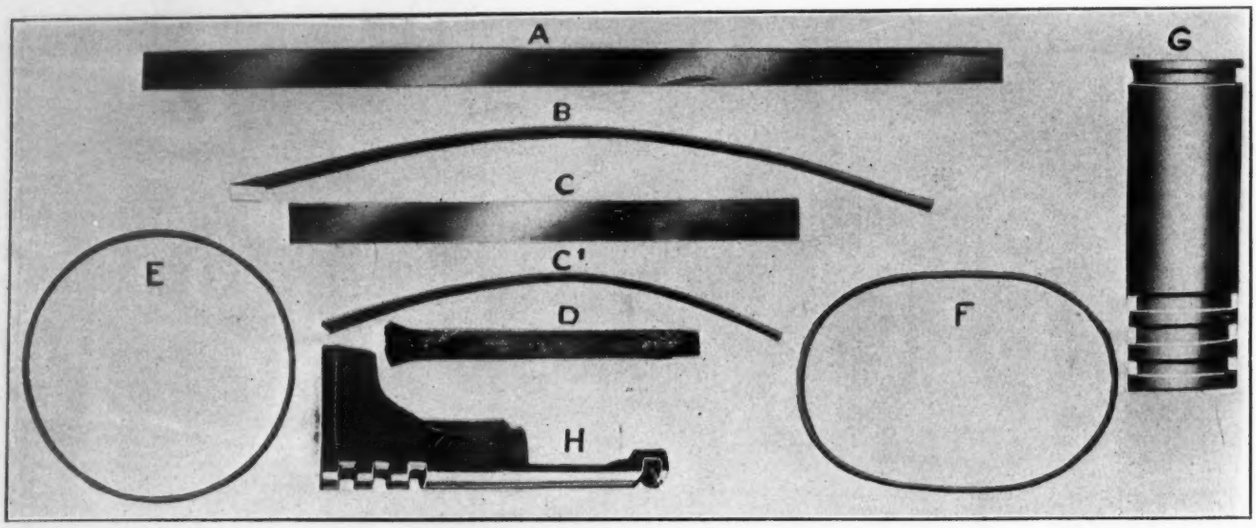


FIG. 11—SAMPLES OF CARR'S VANADIUM IRON CASTINGS

of steel, made in a detachable furnace, from the beginning and end of a pouring interval, and the variations in the content of the various elements are so slight that they might be attributed to ordinary errors in making the determinations:

	Beginning of pour, per cent.	End of pour, per cent.
Carbon	0.33	0.33
Silicon	0.50	0.46
Sulphur	0.04	0.041
Phosphorus	0.04	0.038
Manganese	0.42	0.49

As the pouring period, owing to the small volume of steel, is practically one-half of that of a large furnace, the steel does not have time to segregate and remains uniform in quality.

For making certain castings, copper is alloyed with the steel in proportions as high as 0.5 per cent. The copper is thrown into the furnace in ingot form with the charges and it has been found that it greatly increases the toughness of the metal. Castings made from copper steel can be hammered without

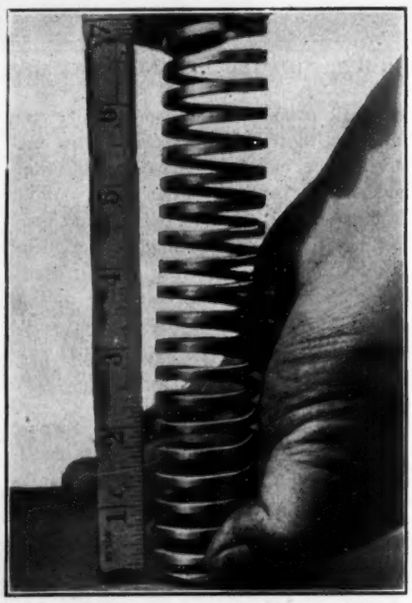


FIG. 12—CAST IRON SPIRAL SPRING EXTENDED

fracture and are unusually free from blow-holes.

As previously stated, when melting, the furnaces are in the position shown in Fig. 1. In Fig. 2 the crane supporting a bail on the crane hook is in position for lifting the melting chamber away from the burner ports ready for pouring. The stopper has been fixed in position and in the tapping hole, *A*, Fig. 1, the nozzle has been inserted. If, after rolling-over the melting chamber slightly, a leak occurs at the nozzle, the furnace is rolled back into melting position and repairs are made. The furnace is attached to the chains on the bail by links which pass over lugs riveted to the shell on either side of the charging door. These links are held in position by pins passing through the lugs, the pins being locked to prevent shifting. In the meantime the burner ports have been moved back on the track and covers are adjusted over both ends of the cone openings of the melt-

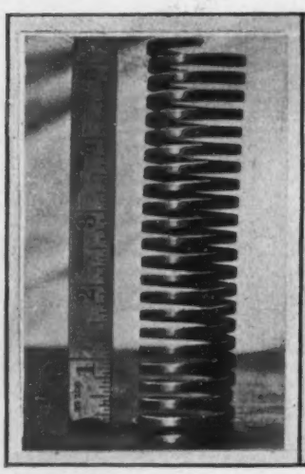


FIG. 13—CAST IRON SPIRAL SPRING

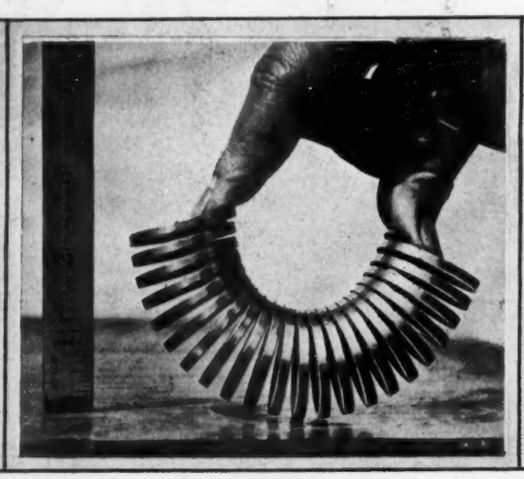


FIG. 14—BENDING TEST OF CAST SPRING

FIG. 15—SPIRAL SPRING COMPRESSED

ing chamber where they connect with the burner ports. Fig. 3 shows the melting chamber suspended by the crane, rolled-over and in pouring position. The stopper is controlled by a lever at the side of the shell. Fig. 4 is another pouring view, showing the melting chamber employed as a ladle at one end of the foundry floor. After the steel has been poured, the slag is permitted to run out and the furnace bottom is left unusually clean. The melting chamber is then returned to the furnace platform, rolled-over into melting position, the stopper and covers are removed and the burner ports are moved back into position. After fixing the bottom, the furnace is ready for the next heat.

The high pouring temperature of the metal permits of casting exceedingly thin and light sections. The gate containing the five letters, abbreviating the firm name, in Fig. 10, is an example of the light work that can be successfully cast without risk of mis-runs. The letters are approximately ⅛ inch thick. A steel key also is shown and at the left is a cast steel bar which was bent almost flat without fracture. The two castings at the right weigh slightly less than one ounce each and are being cast regularly by the Alloy Steel Casting Co.

Practically all light snap flask work is stacked to facilitate pouring. The method of building-up one of these stacks is illustrated in Fig. 5. Four of the molds are bedded in a jacket or flask and the stack is poured five-high. To more clearly show how the stack is built, one height of flasks has been omitted from the stack in Fig. 5. The metal enters the stack from the bottom through a runner, *A*, built-up to the top of the stack and which connects with a bottom runner through which the metal flows and enters the common sprue, *B*, extending through the center of the stack. The metal enters the molds through corner sprues connecting with the gates. The center sprue is made by cutting off diagonally the corner of each flask in which the sprue is located, and this is accomplished by stopping-off this corner in the snap flask when making the mold. The large center sprue, therefore, is square and is of sufficient size to feed all of the molds. Risers also are arranged in each mold and are clearly shown in Fig. 6. This cast steel stack contains 121 castings, the maximum weight being 15 pounds and the minimum, ½ ounce. This remarkable result is obtainable only with exceedingly hot metal and is novel practice as applied to steel foundry operations. In Fig. 6 the runner is shown at *A* and the square center sprue, at *B*. A few of the many risers are indicated by *C*. The loss consisting of runner, sprues, gates, and risers varies from 45 to 60 per cent, which is no greater than when the molds are cast separately. The pouring period of casting this stack was only a fraction of the time that would be consumed in casting the 20 separate molds. The bottom or runner section of one of these stacks is illustrated at *A*, Fig. 7. Two of the stacks with the pouring basin in position ready for the metal are shown at *B*. The dry sand molds are bedded inside of the jacket, which also contain the runner. The bottom runner connecting with the center sprue is shown at *C*. At the

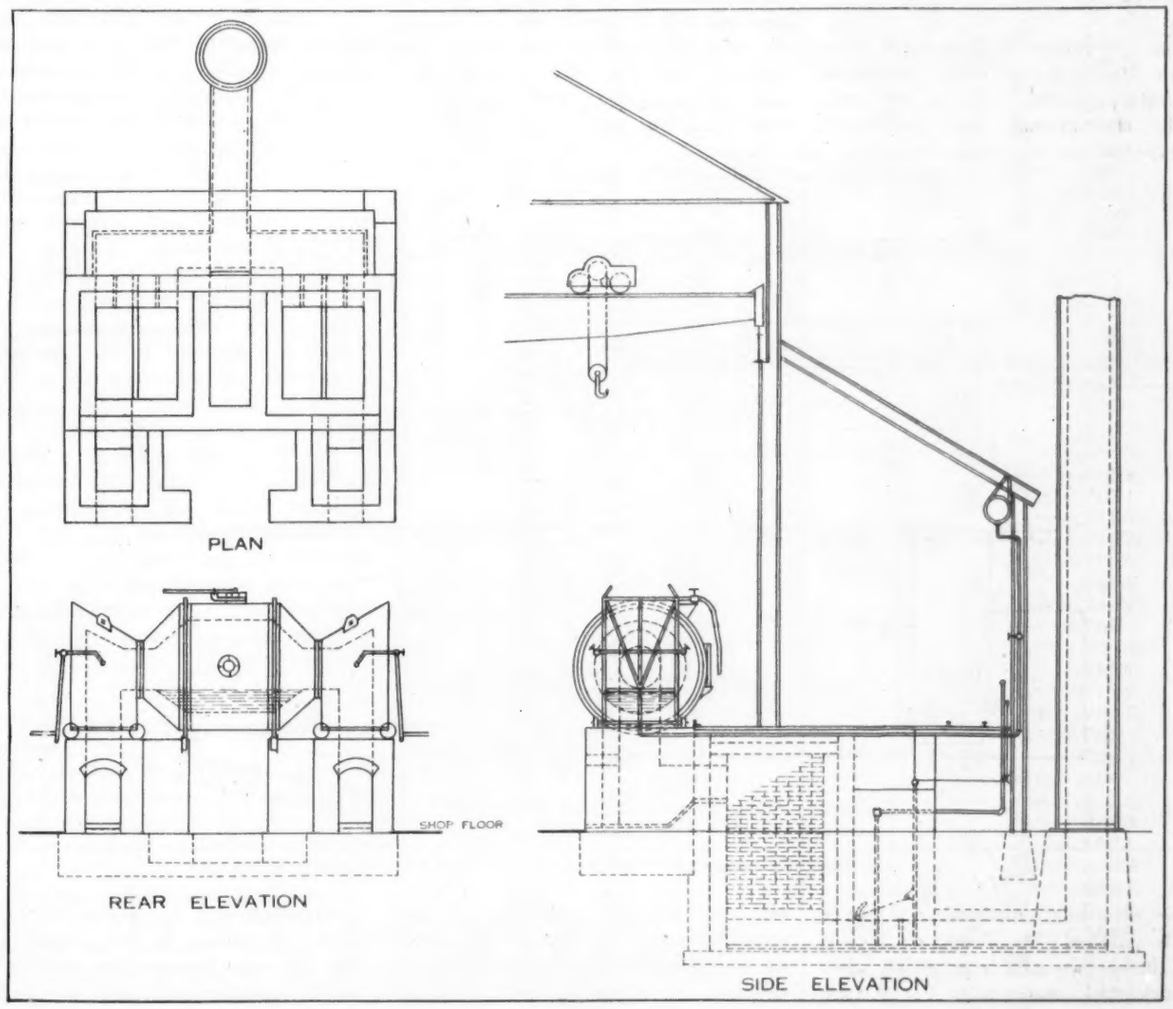


FIG. 16—PLAN, REAR AND SIDE ELEVATIONS OF DETACHABLE OPEN-HEARTH FURNACE

right is illustrated a section of the stack, Fig. 5. This clearly shows the sprues of five of the molds.

In Figs. 8 and 9 the method of making these snap flask molds is clearly shown. The corner gate is at *A*, Fig. 8, and one corner of the mold is diagonally cut off at *B*. The stop-off in the cope flask is shown at *C*. A similar stop-off is located in the drag flask. The pattern for this mold is at *D*. Another mold made with a gate to which six patterns are attached is shown in Fig. 9. The sprue, *A*, leads to one corner of the mold which is cut off diagonally to form the large center sprue.

Gray iron melted in these small open-hearth furnaces develops wonderful physical properties. It is not only tough, close-grained and machinable, but is exceedingly malleable and can be highly polished. At *A* and *C*, Fig. 11, are shown two cast iron strips, about ⅜ inch thick, made from Carr's vanadium iron; *B* shows to what extent strip *A*, could be bent without breaking, and C^1 is strip *C* bent to show its elasticity. Strip *C* was made from a softer mixture than *A* and proved more elastic; *E* is a round chip cut from a piston ring casting and *F* shows to what extent this chip can be distorted without breaking; *G* is a section of a vanadium iron gas engine piston and shows the high polish that can be obtained on this metal, and *H* is a sectional view of a part of this piston casting.

A cast iron spiral spring made of this metal and which reflects its wonderful elasticity, is illustrated in Figs. 12, 13, 14 and 15. The spring can be expanded, compressed and bent through an angle of nearly 180 degrees, without breaking. The spring, which is about 5⅜ inches long, is shown in Fig. 13. The spring is expanded to a length of 7¼ inches in Fig. 12 and in Fig. 15 has been compressed to 3¼ inches. The bending test is shown in Fig. 14.

The control of the mixtures in this type of open-hearth furnace, when melting iron, is practically perfect. Recently, on a certain grade of piston iron, the specified silicon content was 1.6 per cent and the silicon in the castings was 1.55 per cent. The percentages of other elements in this piston iron follow: Sulphur, 0.029; phosphorus, 0.20, and manganese, 0.48. A cylinder iron which was specified to contain 2.25 per cent silicon in the casting contained 2.39 per cent and the percentage of the other elements in this cylinder mixture are given herewith: Sulphur, 0.027; phosphorus, 0.19, and manganese, 0.56. These actual silicon analyses show how closely the specified content can be approximated. Both mixtures contained a small percentage of vanadium.

The mixtures consist of 50 per cent of pig iron and 50 per cent of return iron scrap, no steel being employed. The metal is poled with green timber and approximately 1½ hours is required to make a heat. Natural gas is used for fuel and the sulphur can, therefore, be maintained at a low percentage. The metal is poured from the furnace into a tea-pot ladle equipped with a bottom-pour spout. By the use of this type of ladle, dirt and slag on the iron is prevented from entering the molds. This iron, in its physical properties, closely resembles steel. These extraordinary properties are imparted to this cast iron by the employment of special fluxes and by the method of melting. The fuel used also is a factor as well as the unusual design of the furnace utilized for melting this metal.

The Alloy Steel Casting Co., whose plant is located at Glenova, a suburb of Wheeling, operates under a license from the Carr Furnace Co., which owns the patents of the detachable open-hearth furnace. This iron and steel casting plant is a model foundry and is modernly-equipped throughout. The main building is 80 x 140 feet, of steel construction and is divided into three bays. As shown in the ground plan, Fig. 17, the furnace bay adjoins the metal storage yard, and the furnace platform extends into the middle bay a sufficient distance to permit the 10-ton crane, which commands the center of the shop, to handle the melting chambers of the furnaces. In the opposite side bay are located the snap flask molding and coremaking departments. The middle bay is devoted to large floor work, pouring, shaking-out and cleaning. The molding machine equipment consists of two jar-rammers, one for molds and the other for cores, installed by the Osborn Mfg. Co., Cleveland, as well as a number of squeezers. The melting equipment con-

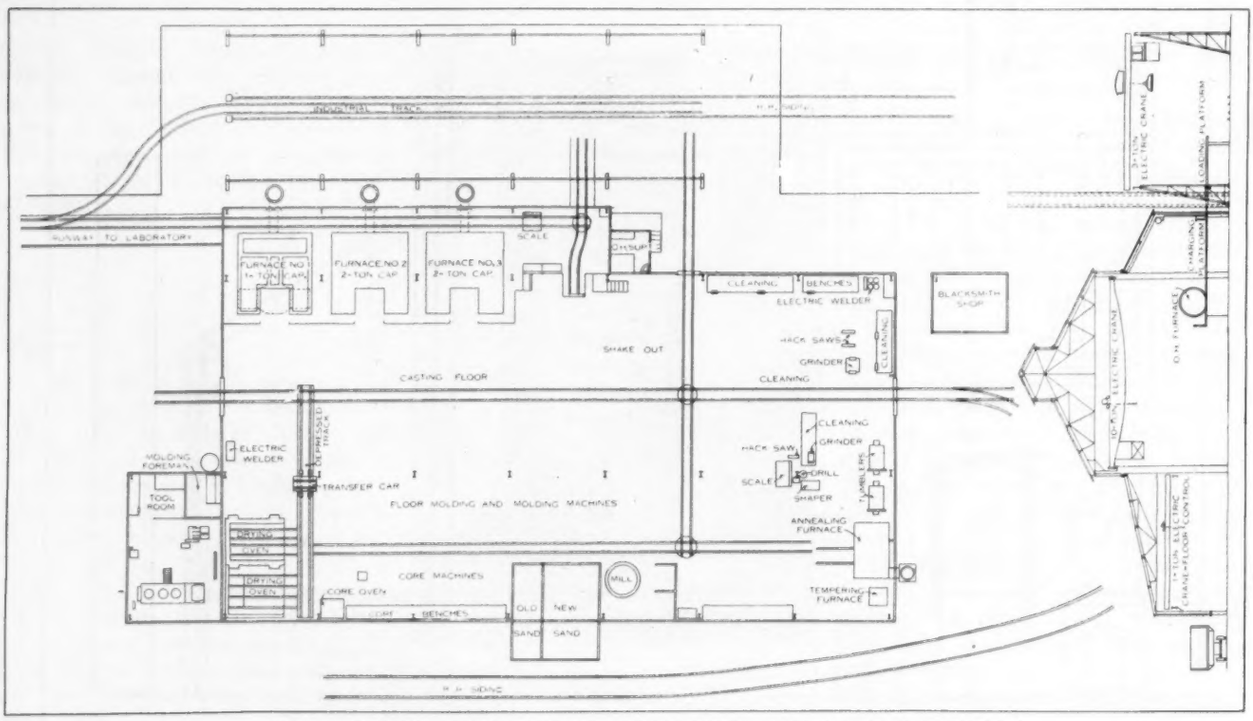


FIG. 17—GROUND PLAN OF THE ALLOY STEEL CASTING CO.'S FOUNDRY

sists of two 2-ton detachable open-hearth furnaces and one 1-ton furnace of the same type. For drying the molds two ovens have been provided. From the ovens the molds are conveyed to the pouring floor on a transfer car operating over a depressed track. In the opposite end of this bay are located the annealing and tempering furnaces, tumbling mills, shaper, hack saw and grinder. This bay is commanded by a 1-ton crane.

The metal storage yard is commanded by a 3-ton crane equipped with a lifting magnet for handling pig iron and scrap. The furnace charges are made-up in the yard and are piled on buggies operating on an industrial track which connects with the track on the charging platform. The entire crane equipment, including a one-ton electric traveler in the middle bay, was installed by the Northern Engineering Co., Detroit. The shop is well-lighted by two rows of windows in the sides and in the ends and ample ventilation is afforded by two rows of windows which extend the entire length of the monitor.

A well-equipped laboratory is maintained and all of the raw material, as well as the metal for the castings, is analyzed. The power plant is located in a building adjoining one end of the foundry. It is equipped with an 85-horsepower gas engine, a General Electric generator set and an air compressor. Two railroad sidings parallel the length of both sides of the foundry, the one extending into the metal storage yard and the other, used for shipping castings, passes close to the sand bins.

Considering Improvements

Officials of the Phillips Sheet & Tin Plate Co. have just completed a tour of inspection of the plants of the company now in operation located at Weirton and Clarksburg, W. Va., and the Pope plant at Steubenville, O., which was recently acquired by the company. President E. T. Weir, E. W. Mudge, H. W. Nesbit, W. A. Shaw, I. W. Frank and C. M. Thorp, of Pittsburgh; A. Bernhard, of New York City; Edward Kneeland, of Pittsburgh, and W. H. Bainbridge, vice president of the company, were among those in the party. The inspection, it is understood, was made in connection with plans for improvements which have been under discussion for some time, and for which definite announcement is looked for shortly.

The Buffalo Electric Vehicle Co. has been floated through John J. Steele, of Buffalo.

Inch Values in 128ths

By Oberlin Smith

Although tables of the values of fractional parts of an inch by sixty-fourths, expressed decimally, are somewhat common, as printed in various handy memorandum books or as supplementary matter in trade catalogs, often in a fragmentary and non-consecutive form, as also is the case with the tables sometimes stamped upon micrometer calipers, I have never happened to see a table giving the value of 128ths of an inch, expressed in decimals. Some years

DECIMAL EQUIVALENTS

FRACTIONS	DECIMALS	FRACTIONS	DECIMALS
1/128	.0078	65/128	.5078
1/64	.0156	33/64	.5156
3/128	.0234	67/128	.5234
1/32	.0312	17/32	.5312
5/128	.0391	69/128	.5391
3/64	.0469	35/64	.5469
7/128	.0547	71/128	.5547
1/16"	.0625	9/16"	.5625
9/128	.0703	73/128	.5703
5/64	.0781	37/64	.5781
11/128	.0859	75/128	.5859
3/32	.0937	19/32	.5937
13/128	.1016	77/128	.6016
7/64	.1094	39/64	.6094
15/128	.1172	79/128	.6172
1/8"	.125	5/8"	.625
17/128	.1328	81/128	.6328
9/64	.1406	41/64	.6406
19/128	.1484	83/128	.6484
5/32	.1562	21/32	.6562
21/128	.1641	85/128	.6641
11/64	.1719	43/64	.6719
23/128	.1797	87/128	.6797
3/16"	.1875	11/16"	.6875
25/128	.1953	89/128	.6953
13/64	.2031	45/64	.7031
27/128	.2109	91/128	.7109
7/32	.2187	23/32	.7187
29/128	.2266	93/128	.7266
15/64	.2344	47/64	.7344
31/128	.2422	95/128	.7422
1/4"	.250	3/4"	.750
33/128	.2578	97/128	.7578
17/64	.2656	49/64	.7656
35/128	.2734	99/128	.7734
9/32	.2812	25/32	.7812
37/128	.2891	101/128	.7891
19/64	.2969	51/64	.7969
39/128	.3047	103/128	.8047
5/16"	.3125	13/16"	.8125
41/128	.3203	105/128	.8203
21/64	.3281	53/64	.8281
43/128	.3359	107/128	.8359
11/32	.3437	27/32	.8437
45/128	.3516	109/128	.8516
23/64	.3594	55/64	.8594
47/128	.3672	111/128	.8672
3/8"	.375	7/8"	.875
49/128	.3828	113/128	.8828
25/64	.3906	57/64	.8906
51/128	.3984	115/128	.8984
13/32	.4062	29/32	.9062
53/128	.4141	117/128	.9141
27/64	.4219	59/64	.9219
55/128	.4297	119/128	.9297
7/16"	.4375	15/16"	.9375
57/128	.4453	121/128	.9453
29/64	.4531	61/64	.9531
59/128	.4609	123/128	.9609
15/32	.4687	31/32	.9687
61/128	.4766	125/128	.9766
31/64	.4844	63/64	.9844
63/128	.4922	127/128	.9922
1/2"	.500	1"	1.0000

TABLE OF DECIMAL EQUIVALENTS OF INCH VALUES IN 128THS

ago I had such a table prepared, giving every fraction in consecutive order, from 1/128 to 1 inch translated into ten-thousandths. I have found it very convenient in my own practice, not only in our commercial and engineering offices, but in the drafting room and shop. This table is shown in the accompanying illustration. The last of the four figures of the decimals is arranged to give the nearest approximation to the real value, which would be expressed more closely by additional decimal places.

I have been asked by a friendly critic what need there is in practice for such fine measurements expressed in vulgar fractions, and why anything but thousandth-inches should be dealt with below sixty-fourths. In reply, I will state first, that some shops have been in the habit of figuring their drawings in 128ths and sometimes in 256ths. In my own practice I have a steel scale that is graduated to 128ths having a small sliding magnifying glass mounted above it. It must be admitted that this custom is perhaps a relic of the old-fashioned times, before the present convenient micrometers were in such extensive use. For this reason, therefore, the table in question may be somewhat limited in its usefulness.

A second, and more important reason for using such a table is that while we are hampered by the use of binary divisions and the decimal system mixed together, we have a better conception of the real distances we are working with when expressed in sixteenths, eighths, etc., than when in thousandths, especially if the fraction is a large part of an inch. We are, therefore, very apt to look down the thousandth column in a table until we find the quantity that we have in mind, referring it over to the vulgar-fraction column to see about how much it is. If it happens to come between two amounts expressed in sixty-fourths it is very convenient to see just where it belongs; and we are happy to find the extra 128ths interpolated.

A third instance of the usefulness of this table is in calculating fine diametral-pitch gearing. In the case of 64-pitch gears some of the distances from center to center would naturally be expressed in 128ths. Gears of this pitch are sold by dealers as standard supplies. Another similar case is the expression of the radii of various circles, the diameters of which are given on a drawing figured in sixty-fourths.

Still another instance may be cited, where it is desired to reduce the scale of a drawing whose measurements are expressed in sixty-fourths, to one-half size, without incurring the inaccuracy due to translation into decimals, with some of the decimal places abandoned.

It may be argued that the same logic aimed at in the above remarks would carry us still further in binary divisions to 256ths, etc. This is true, but we must draw the line somewhere, and the 128ths seem to be about as fine divisions as can be recognized singly upon a scale with the naked eye.

For a really logical solution of the whole problem we must wait until that golden time in the happy future of the world when we shall have a new system of numeration, with a new base of 16 instead of 10; where everything can be arranged by the natural, useful and beautiful system of universal binary division. We will then have all of the advantages in calculation incident to the decimal system, without the inconveniences in practical work due to trying to divide up the foolish base number, 10. We will, moreover, by the simple device of having a few more kinds of digits, escape a considerable portion of the quantity of figuring needed to express our mathematical emotions.

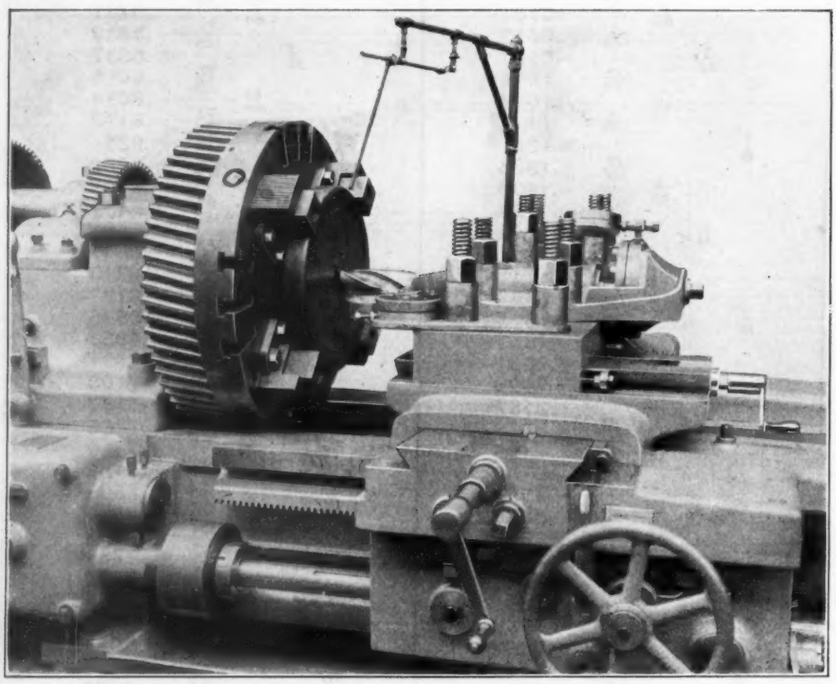


FIG. 1—LATHE ARRANGED FOR DRILL TESTING

Lathe for Testing Tools and Drills

By C. Van Langendonck

A lathe, specially designed for making tests on tool steel, as well as for doing general work, has been recently built at the works of W. G. Armstrong, Whitworth & Co., Openshaw, England. For the purpose of making tests on steel, this powerful, 18-inch high-speed lathe is provided with Dr. Nicolson's tool dynamometer for recording the vertical, traversing and outward forces for cuts up to 0.08 square inch area, and for testing the torque and thrust of twist drills up to 3 inches in diameter. Fig. 2 shows the lathe and dynamometer set for turning tests; Fig. 1 illustrates the lathe arranged for drill testing, and Fig. 3 is a front elevation and plan of the drill dynamometer. The lathe will take in work 13 feet long between the centers, and is driven by a 60-horsepower, variable-speed motor. This, together with the gear changes, will give a range of face-plate speeds from three and one-half to 62 revolutions per minute.

To insure smooth operation, the headstock gearing is of the single helical pattern, and the various gears are engaged and disengaged by means of the two levers, shown in front of the headstock, Fig. 2. The spindle of the fixed head is made of forged steel, and runs in parallel phosphor bronze bearings, the end thrust due to cutting being taken by a ball bearing behind the front bearing of the headstock. There are six sliding feeds, giving from two to 16 cuts per inch, the changes being obtained by the two levers on the gearbox in front of the bed.

To permit specially fine feeds for drilling tests to be obtained, special gearing is arranged at the end of the

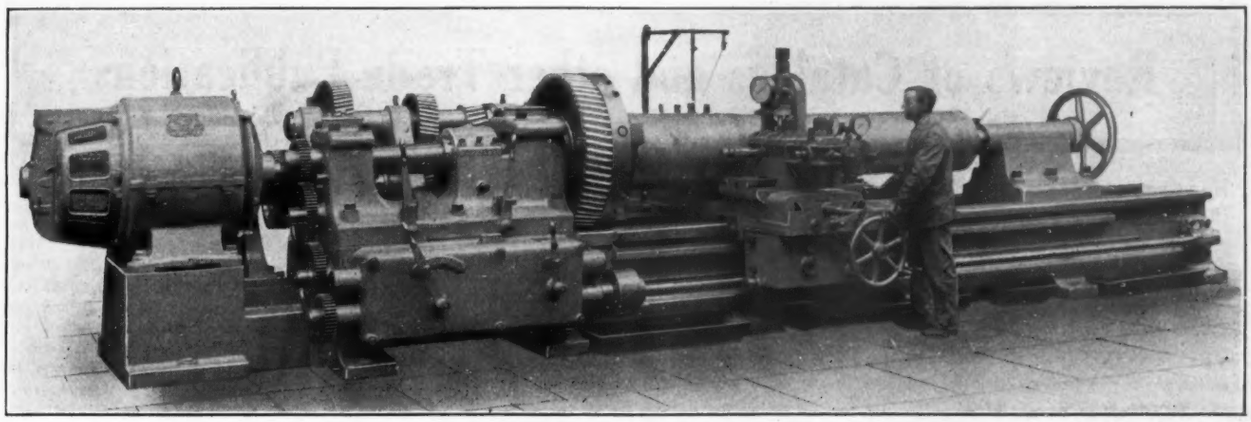


FIG. 2—LATHE AND DYNAMOMETER SET FOR TURNING TESTS

bed. These feeds range between 20 and 100 cuts per inch. The saddle is fitted with two top rests, one on the front and the other on the back, and is propelled along the bed by means of two steel pinions meshing into steel racks, one at the front and the other at the back of the lathe. The saddle is also provided with mechanism for starting, stopping and reversing the feeds. The mechanism is controlled by means of levers placed in a convenient position for the workman. A hand traversing arrangement is also provided. All gearing is machine cut from solid blanks, the face-plate gear wheel being of forged steel, and the remaining headstock wheels of steel or brass.

The dynamometers are of Nicolson's design. The object of these appliances is to ascertain the pressures operating between the work and the cutting tool, as affected by the material, the size and shape of the cut, the speed of cutting, and the form of the tool point. The principles on which the appliance is based were described by the inventor before the British Institution of Mechanical Engineers in 1905. The design has, however, been materially improved, so that a vertical force of seven tons on the point of the tool can be obtained. A modification of some importance has been instroduced in the drilling attachment shown in Figs. 2 and 3, which is calculated to render it more sensitive and also capable of use with the largest drills or boring tools. In the original design the apparatus was secured to one slide rest only, and it was difficult to avoid the springing of the rest due to the backward push of a large drill. In the present appliance this is avoided by the casting, *A*, which bridges over both the front and the back rests, *EF*. The drill is guided without friction in the tubular portion, *B*, in this casting, and is kept central with the lathe axis. Two of the dynamometer diaphragms, *CD*, from the lathe tool appliance, are fitted on the casting, one, *C*, to measure the feed force, and the other, *D*, the torque.

Vanadium Steel Exhibits

The American Vanadium Co., Pittsburgh, is making an extensive display of vanadium steel sections at the Atlantic City exhibit conducted by the Railway Master Car Builders' and Master Mechanics' Associations. The application of vanadium steel and iron in locomotive construction has increased to a very great extent during the past year. A pair of heat-treated chrome-vanadium steel rolled wheels that have been in passenger service for over two years, are displayed. These have a record

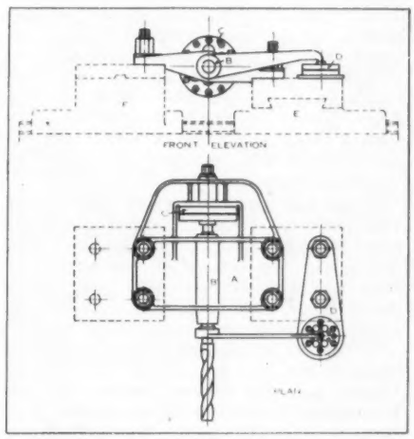


FIG. 3—DRILL DYNAMOMETER

of 258,529 miles and are still good for about 40,000 miles.

The remarkable strength and toughness of vanadium steel castings are demonstrated by the exhibit of the Union Steel Castings Co., Pittsburgh. Three castings are shown which were distorted by blows from a 3,000-pound drop ball. The frame was subjected to 15 blows from a height of 17 feet and one blow at a height of 15 feet. The physical properties of this casting as determined by a test coupon, follow: Elastic limit, 49,380 pounds per square inch; tensile strength, 80,600 pounds per square inch; elongation in 2 inches, 27 per cent, and reduction of area, 54.7 per cent.

The rocker casting was subjected to one blow from a height of 16 feet, three blows from 12 feet and one blow from 5½ feet. The physical properties of this casting follow: Elastic limit, 50,020 pounds per square inch; tensile strength, 79,460 pounds per square inch; elongation in 2 inches, 27.5 per cent, and reduction of area, 49.1 per cent.

The crosshead arm was subjected to one blow from a height of 5 feet, two blows from 3 feet and three blows from 3½ feet. Its physical properties are as follows: Elastic limit, 50,200 pounds per square inch; tensile strength, 79,860 pounds per square inch; elongation in 2 inches, 28 per cent, and reduction of area, 47 per cent.

Brass Melting Furnaces

The United States bureau of mines will make an investigation of brass melting furnaces with a view to ultimately reducing the oxidation or volatilization losses of metal. A committee of the American Institute of Metals is co-operating with the bureau of mines and the members of this organization are requested to furnish detailed information covering the operations of their brass melting furnaces. The data sought includes the shape and dimensions of furnaces, details of fuel and air supply, metal charges, percentages of losses, etc.

Three over-fired accurate temperature furnaces for the heat treatment of steel forgings, etc., have been installed in the plant of the Heppenstall Forge & Knife Co., Pittsburgh, by the Rockwell Furnace Co., New York City. The largest furnace has a heating chamber 4 feet wide and 50 feet long. The furnaces are oil-fired.

Reviews of Catalogs and other Trade Publications

MANGANESE STEEL CRUSHER PARTS.—In a four-page bulletin, issued by the Taylor Iron & Steel Co., High Bridge, N. J., manganese steel crusher and pulverizer parts are illustrated and described. Manganese steel screen plates which are recommended for their great wearing quality are likewise shown.

VENTILATING FANS. — Three booklets descriptive of the disc, electric and steel plate fans as well as the steam traps manufactured by the American Blower Co., Detroit, Mich., have been issued by that company. Complete descriptions of the fans and of the tilting tank type of steam traps, are given.

WATER TOWER STRUCTURES. — Steel water towers, manufactured by the Des Moines Bridge & Iron Co., Des Moines, Ia., are described in a catalog now being distributed by that company. Illustrations of towers, stand pipes, steel barges, bridges, smoke stacks and other classes of plate work built by the company, are shown.

WIRE DRAWING EQUIPMENT. — The Morgan Construction Co., Worcester, Mass., has recently published a catalog descriptive of the wire mill equipment it manufactures. This includes drawing frames, muffle and pot annealers, dry houses, cleaning cranes, cleanings vats, galvanizing equipment, mill trucks, die reaming lathes, etc.

ELECTRICAL APPARATUS.—The General Electric Co., Schenectady, N. Y., has recently issued publications describing small polyphase motors, battery charging rheostats, direct current test meters, direct current motor starting panels for heavy service, water flow meters, isolated and small plant alternating current switchboard panels, direct current motors, railway motors, and the application of electricity in mines.

STEEL SASH. — The Trussed Concrete Steel Co., Detroit, has recently published a large descriptive booklet styled the United Steel Sash Hand Book, which is one of the most comprehensive publications on steel sash ever issued. The United Steel Sash include standard pivoted side wall sash, vertical and horizontal sliding sash, center pivoted and top hung continuous sash, movable partitions of steel and glass, sliding and swing doors and casement sash.

TURBINES.—The De Laval Steam Turbine Co., Trenton, N. J., recently issued its annual catalog. It contains about 125 pages, many of which contain full-page illustrations. The first section of the catalog is devoted to the single-stage turbine; consideration affecting choice of type of turbine and the relation between rotative speed and the number of stages is discussed in the second section; the design and construction of the multi-stage turbine is the topic considered in section three, and the remainder of the catalog is devoted to turbine practice.

WATERPROOFINGS, ETC.—In a booklet recently issued by the Trussed Concrete Steel Co., Detroit, is described the line of Trus-Con chemical products manufactured by that concern. This line includes waterproofing, dampproofing and other paints and compounds. The booklet contains a complete discussion of the various methods of protecting masonry, concrete, plaster and steel against water, dampness, etc. The book is handsomely illustrated with views of buildings which have been waterproofed and dampproofed by the application of Trus-Con products.

FANS AND BLOWERS.—A number of bulletins have been issued by the American Blower Co., Detroit, devoted to some of its various products, including "Sirocco" fans and blowers, cast iron blower and exhaust fans, vertical self-oiling engines, twin variable speed steam engines, steam traps and ventilating sets. The various bulletins briefly illustrate and describe the different machines and equipment and numerous installations and testimonial letters from satisfied users are included.

IRON, STEEL AND TOOLS.—A departure from its usual custom has been made by the Scully Steel & Iron Co., Chicago, which has just issued its 1912 Blue Book. The monthly stock list has been discontinued and the annual blue book will hereafter show the various lines and tonnages carried in stock. The book carries a complete list of the iron, steel, machinery, heavy hardware, tools and supplies carried by the company. Tables of interest to boiler manufacturers and other steel users, are shown which contain information covering riveted joints, butt joints and bursting pressure of boiler shells.

PAXSON-COLLIAU CUPOLA.—In bulletin No. 26, issued by the J. W. Paxson Co., Philadelphia, the Paxson-Colliau cupola is illustrated and described. Blowers for operating this furnace are shown, as well as sectional views which show its construction in detail. Several pages are devoted to suggestions for operating this type of cupola, together with recommendations regarding the methods of charging, melting, etc. The catalog is well arranged and contains several pages devoted to cupola fire brick, cupola tenders' tools, patent cupola breast and runner, charging floor elevators, cars, scales for weighing charges, etc.

ELECTRICAL EQUIPMENT FOR STEEL PLANTS.—The General Electric Co., Schenectady, N. Y., has issued an elaborate bulletin devoted to the subject of electrical equipment for iron and steel mills. The bulletin should be of great interest to everyone connected with this industry. Among the subjects treated, are generating and transforming apparatus for steel mill service; electrical distribution of power for steel plants; small mill type motors for alternating current and direct current motors for rolling mill service; control equipment for steel mills; synchronous condensers for improvement of power factor, and electric lighting of steel plants.

FLEXIBLE SHAFTS.—An 88-page catalog, issued by the Stow Mfg. Co., Binghamton, N. Y., is devoted to the line of products manufactured by this concern. The Stow flexible shaft, adapted for all purposes such as the operation of portable drills, grinders, etc., is illustrated and described, together with universal joints for use in connection with this shaft. Scratch brushes for use in connection with portable grinders are shown. This company also manufactures multi-speed motors of the open and semi-enclosed types and various applications of these machines are illustrated. The catalog is well arranged and many of the large number of the applications of flexible shafts are illustrated.

POWER TRANSMISSION MACHINERY.—In a 416 page book, 9 x 6 inches, the Dodge Mfg. Co., Mishawaka, Ind., gives a detailed description of the power transmission machinery it manufactures. Price lists and dimension charts of the various lines of shaftings, couplings, friction clutches, bearings, etc., handled by the company, make the catalog one of the most complete it has ever issued. The Dodge American system of rope driving, in which one continuous rope is used, as well as the water wheel harness, fly wheels, balance wheels, belt conveyors, spiral steel conveyors, car pullers and leather belting, are described and illustrated. Valuable tables for aid in computing dimensions of circles, are also given.

SHEET METAL MACHINERY.—A handsomely illustrated 32-page catalog, issued by the Canton Foundry & Machine Co., Canton, O., is devoted to this company's extensive line of sheet metal machinery. This includes conductor pipe and eave trough machines, paint rolls, drop presses, melting outfits and dies for ceilings, sidings, cornices, etc. Among the equipment illustrated are squaring shears, hand edging or folding machines, conductor pipe and eave trough forming machines, conductor pipe corrugating and seaming machines, power-driven pipe swedging machines, adjustable all steel beading machines, slip joint machines, drop presses, portable floor crane and hoist, paint rolls, etc.

MOLDING MACHINES. — The complete line of molding machines, sand sifters and other foundry equipment, manufactured by the Arcade Mfg. Co., Freeport, Ill., is illustrated and described in a handsome two-color, 54-page catalog issued by this company. The various labor-saving molding machines not alone are shown, but in addition, views of foundry floors are included which graphically illustrate the capacities of these machines. In addition, castings varying in weight from ounces to thousands of pounds made on the Arcade line of machines are illustrated. The types of molding machines shown include the Modern, which is used to produce molds usually made in snap flasks by bench molders. Several views of sash weight equipment for making such molds on the Modern machine are included, as well as patterns for stove lids, long center castings, etc. The description of the pattern plate equipment, as well as the details of making white metal pattern plates, composition plates, etc., are unusually complete. The automatic molding machine built by the company also is shown. An extensive line of squeezers is manufactured on which gated metal patterns, as well as pattern plates may be used. The heavy duty Arcade squeezers illustrated are built for handling flasks up to 36 inches in length. This type of squeezer is built in two sizes containing one and two cylinders. A combination jolter and squeezer which may be used as a simple squeezer, a plain jolting machine or for the combination jolting and squeezing operations, is included. A large section of the catalog is devoted to the use of Norcross jolting machines, together with castings poured in molds made on this molding device. Single two and three cylinder machines are shown, as well as a small core jolting machine. The rotary sand sifters, which conclude the catalog, are driven by electric power, air motor or by hand. This catalog is unusually comprehensive and well-arranged and should prove of value to every foundryman.

Iron and Steel Securities

The stock exchange during the last week was irregular and dominated almost entirely by professional traders. The "money trust" inquiry had a depressing effect while the political situation was another contributing factor, although the street showed less interest in the Chicago convention than had been predicted. There were declines at the beginning and close of the week with a rally on Wednesday and Thursday.

Monday, prices were irregular and averaged slightly lower. Government crop reports showed a slight deterioration in the condition of winter wheat and a high average condition of spring wheat and oats. Tuesday, the market opened weak with industrials leading the decline. Uneasiness over the congressional investigation was ascribed as the cause. Wednesday, the market was extremely dull. Foreign stock markets heavy. English consols declined to 76 3/16, the lowest for many years. Thursday, the dullness continued but with a firmer undertone. Foreign discounts firmer. Friday, there was a sharp decline in stocks, Steel being among those suffering the heaviest loss. Nervousness over the political situation responsible for the break. There was a partial recovery before the close of the market. Saturday, market again extremely dull within a narrow range.

Money on call ranged between 3 and 2 per cent. Time money was active. The actual condition of clearing house institutions showed loans increased $40,893,000; net deposits increased $41,521,000; total reserve $464,721,000, and the excess of reserve $27,780,900, an increase of $324,450. Non-member banks and trust companies showed loans decreased $2,011,700; net deposits decreased $11,498,000; reserve on deposits decreased $2,139,100, and the percentage of reserve 19.2, against 19.3 the week previous. Bank clearings showed a decrease of 7 per cent from the preceding week and an increase of 4.5 per cent over the corresponding week last year. Fortnightly railroad statistics showed an idle car surplus of 86,386, a decrease of 29,815 over the preceding fortnight. Commercial failures numbered 233, compared with 257 the preceding week and 221 the corresponding week last year. Shares were sold to the number of 1,758,460, compared with 2,287,800 the preceding week and 2,474,639 the corresponding week a year ago. Bonds, exclusive of government bonds, were sold to the amount of $8,483,000, compared with $11,465,000 the preceding week and $15,001,000 the corresponding week a year ago.

	Clos'g Quo. June 15	Changes in week.	Annual Meeting date 1912	Stock Outstanding	Basis.	Dividend Last Dividend	Dividend Date Last Div. Pay
Allis-Chalmers	¾	.....		$19,820,000		.....	
Allis-Chalmers, pr.	2	— ½		16,050,300	7 cum.	1¾ Q.	Feb., 1904
American Can	32¾	—4	Feb. 6	41,233,300		.....	
American Can, pr.	116	—2¾		41,233,300	7 cum.	1¾ Q.	July, 1912
Am. Car & Fdy.	58¾	—1	June 27	30,000,000	2	½ Q.	July, 1912
Am. Car & Fdy., pr.	118¼	—1¼		30,000,000	7 n. c.	1¾ Q.	July, 1912
American Loc.	41¼	—1	Oct. 15	25,000,000	5	1¼ Q.	Aug., 1908
American Loc., pr.	108¼	+1¼		25,000,000	7 cum.	1¾ Q.	Apr., 1912
American Ship	50⅞	.....	Oct. 9	7,600,000	4	2 Q.**	June, 1911
American Ship, pr.	101	.....		7,900,000	7 n. c.	1¾ Q.	Apr., 1912
Am. Steel Foundries	37	+ ½	Mar. 21	17,184,000	5	1¼ Q.	May, 1911
Barney & Smith	10	.....	June 4	2,000,000	4	1 Q.	Dec., 1907
Barney & Smith, pr.	75	.....		2,500,000	8 cum.	2 Q.	Dec., 1911
Bethlehem Steel	36⅛	—1½	April 2	14,862,000		.....	
Bethlehem Steel, pr.	69½	—2½		14,908,300	7 n. c.	¾ Q.	Feb., 1907
Cambria Steel	43⅜	.....	Mar. 19	45,000,000*	5	1¼ Q.	May, 1912
Cambria Iron	43	—1		8,468,000*	4	2 S. A.	Apr., 1912
Chicago Pneumatic Tool	48¾	.....	Feb. 19	6,448,800	4	1 Q.	Apr., 1912
Colorado Fuel	32	+3⅜	Oct. 21	34,235,500		1¾ Q.	Apr., 1902
Crucible Steel	133¾	+1	Nov. 15	24,578,400		.....	
Crucible Steel, pr.	88¾	+2½		25,000,000	7 cum	1¾ Q.	June, 1912
Empire Steel	5	.....	Feb. 28	1,254,770		.....	
Empire Steel, pr.	45	.....		2,500,000	6 cum.	2 S. A.	July, 1911
Fay & Egan	75	.....	Feb. 20	1,000,000	7	1¾ Q.	Nov., 1908
Fay & Egan, pr.	115	.....		1,000,000	7 cum.	1¾ Q.	May, 1912
General Electric	169⅛	+ ⅛	May 14	77,281,200	8	2 Q.	July, 1912
Harbison-Walker	39	.....	Jan. 15	18,000,000	2	½ Q.	Mar., 1912
Harbison-Walker, pr.	101	+1		9,600,000	6 cum.	1½ Q.	Apr., 1912
International Pump	25	—1	Dec. 10	17,762,500		½ Q.	Apr., 1905
International Pump, pr.	79⅞	— ⅛		11,350,000	6 cum.	1½ Q.	May, 1912
Lackawanna Steel	35	— ½	Mar. 13	34,978,000		.....	
Lake Sup. Corp.	30	— ¾	Oct. 2	40,000,000		.....	
New York Air Brake	74½	+ ½	Mar. 13	10,000,000	6	1½ Q.	July, 1911
Niles-Bement-Pond	95	.....	Feb. 7	8,500,000	6	1½ Q.	June, 1912
Niles-Bement-Pond, pr.	101	.....		2,000,000	6 cum.	1½ Q.	May, 1912
Otis Elevator Co.	76	.....	Mar. 18	6,358,600	4	1 Q.	Apr., 1912
Otis Elevator Co., pr.	100	.....		6,375,300	6 n. c.	1½ Q.	Apr., 1912
Pa. Steel	60	.....	May 13	10,750,000		.....	
Pa. Steel, pr.	99¾	+ ¼		20,587,500	7 n. c.	3½ S. A.	May, 1912
Pittsburgh Coal	21	—1½	Mar. 12	28,104,600		.....	
Pittsburgh Coal, pr.	90	— ⅜		27,071,800	7 cum.	1¼ Q.	Apr., 1912
Pittsburgh Steel Co., pr.	101½	—1¾	Oct. 7	7,000,000	7 cum.	1¾ Q.	June, 1912
Pressed Steel Car	34½	—1	Feb. 21	12,500,000		1 Q.	Aug., 1904
Pressed Steel Car, pr.	101	.....		12,500,000	7 n. c.	1¾ Q.	May, 1912
Pullman	160	+ ½	Nov. 13	120,000,000	8	2 Q.	May, 1912
Railway Stl. Spring	35¼	+ ¼	Mar. 7	13,500,000	2	1 S. A.	Oct., 1908
Railway Stl. Spring, pr.	102	.....		13,500,000	7 cum.	1¾ Q.	June, 1912
Rep. Iron & Steel	23⅝	—1⅜	Oct. 16	27,191,000		.....	
Rep. Iron & Steel, pr.	79¼	— ¾		25,000,000	7 cum.	1¾ Q.	Jan., 1912
Sloss-Sheffield	52	— ¼	Mar. 13	10,000,000	5	1¼ Q.	Sept., 1910
Sloss-Sheffield, pr.	100	.....		6,700,000	7 n. c.	1¾ Q.	Apr., 1912
U. S. Pipe & Fdy. Co.	21½	+ ⅞	June 26	12,500,000		1 Q.	Dec., 1907
U. S. Pipe & Fdy. Co., pr.	57½	— ½		12,500,000		1¼ Q.	June, 1911
U. S. Steel	68½	—1⅜	April 15	508,302,500	5	1¼ Q.	June, 1912
U. S. Steel, pr.	110⅜	— ¾		360,281,100	7 cum.	1¾ Q.	May, 1912
U. S. Steel 5s	102¼	— ⅜		465,189,500	5	5 Q.‡	
Va. Iron, Coal & Coke	58¾	+ ¾	Sept. 17	9,073,680		.....	Oct., 1907
Westinghouse Air Brake	174¼	— ¾	Oct. 1	20,000,000*		5. †	July, 1912
Westinghouse Electric	73	— ¾	June 12	3,998,700*	7 cum.	1¾ Q.	Apr., 1912

Par value of shares, $100, except those starred (*), $50.
**Includes last 1 per cent payment of 4 per cent extra.
†Stock.
‡Include 2½ regular, 1½ extra and 1 special.

Copper Stocks

New York.—Amalgamated Copper closed 84¼, a net loss of 2⅛.

Boston.—Anaconda closed 44⅜, a net gain of 1⅞; Calumet & Arizona closed 74¾, a net loss of 2¾; Calumet & Hecla closed 520, a net loss of 4; North Butte Mining closed 30, a net loss of 1½; Quincy Mining closed 90½, a net loss of 1½.

Financial Notes

The Calumet & Arizona Mining Co. has declared a dividend of $1 a share.

The International Harvester Co. has declared the usual quarterly dividend of 1¾ per cent on common stock, payable July 15.

The regular quarterly dividends of 1½ per cent on the preferred A stock and of 1¼ per cent on the preferred B stock, has been declared by the American Smelters Securities Co., payable July 1.

THE IRON TRADE REVIEW

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The Steel Industry on Trial

In spite of the fact that the hearings in New York have already covered a fair portion of the ground embraced in the government's petition for the dissolution of the United States Steel Corporation, an analysis of the testimony submitted up to this time shows a ridiculously small amount of damaging evidence.

There has been no attempt on the part of any of the witnesses to conceal the fact that the Steel Corporation subsidiaries, in days gone by, took part in various price pools; that the Corporation hoped in time to develop a profitable business when it took over the Tennessee Coal, Iron & Railroad Co.; that the Corporation endeavored to provide itself with adequate supplies of high grade ores, or that the Corporation endeavored in other ways to strengthen its position. The tendency of the testimony has been rather to show that the Corporation's competition has been fair; that it paid fair prices for all properties it took over; that it has bettered the condition of its employes and that it has wrought great and lasting good to the iron and steel industry of the country.

Up to this time, attention has been directed by the government representatives mainly to the price pools which prevailed up to and prior to the year 1909. This line of questioning has evidently afforded much satisfaction to the federal counsel, who show an apparent relish in dissecting each separate pool. Unfortunately, however, for sensation lovers and for the holding of public interest in the hearings, these matters have long since been threshed out and passed into history.

The obvious fact is, and it cannot but impress itself on the mind of any one who has followed the course of government investigation of the steel business throughout the past few years, that the subsidiaries of the Steel Corporation were no more wicked in this respect than any of the other concerns in the industry. Such price agreements and pools were universal in their prevalence in the iron and steel industry for many years. There is no means now of telling just at what time or where they had their inception, but it is known that in the early eighties they were well established and were regarded by the trade in general as highly desirable arrangements for the safeguarding of business and the elimination of destructive competition. That such associations existed was a matter of common knowledge. Their membership included not only the companies which were later taken into the Steel Corporation, but, with few exceptions, all other concerns of importance.

Suppose that the present suit will be successful—which seems highly improbable from the evidence so far submitted—what is to be done with the other companies in the rank and file of the iron and steel industry? Have not the leading independent companies been made up largely by consolidations of smaller companies, eclipsed only by the overtowering magnitude of the Steel Corporation? Have they not organized and conducted their business in precisely the same manner as has the Steel Corporation? Have they not had their price pool connections and have they not committed their share of other so-called business "crimes"? Can the dissolution remedy be applied to one and not to the others?

The present suit against the Steel Corporation is accordingly not an action against an individual interest. It is practically an attack against all steel makers. It is the steel industry of the country that is on trial.

Growth in Steel Sheet Consumption

Plans of the automobile manufacturers for the coming season indicate that this industry will use between one-quarter and one-third of a million tons of sheets, a quantity which would have been simply inconceivable a decade ago for such an industry. Indeed, the total output of sheets only seven years ago, in 1905, was less than a million tons. The comparison is only approximate, in that the official statistics include as sheets only 13 gage and lighter, while the automobile industry uses some sheets of heavier gage, but it is suggestive nevertheless. In 1895, ten years earlier, the total production of sheets, 9 gage and lighter, was less than half a million tons, and even that tonnage included the black plates for tinning.

The automobile industry is only one of several very important industries which have appeared in very recent years as large consumers of sheets. The electrical industry uses an enormous tonnage, probably more than the automobile industry, yet ten years ago there was comment upon the fact that the tonnage of sheets used in the electrical industry had passed the 50,000-ton mark and was making for the 100,000-ton mark. The manufacture of metal furniture of various descriptions, and the manufacture of metal doors, sash and frames, is of more recent origin, and dates as an important proposition within the last half dozen years. In older lines of employment, such as

for ornamental ceiling and metal lath, the growth in recent years has been rapid.

In the old days, prior to about the last decade, the use of sheets was very widely distributed. No one line used so much that its tonnage was individually regarded as of great importance. This miscellaneous use of sheets has doubtless increased at approximately the same pace as the total production of steel, as population has increased and the business activity per capita has increased, but in addition to this ordinary growth there has been the special growth in these several industries which have individually come to employ very large tonnages. The net result is that the consumption of sheets has increased much more rapidly than the use of steel in general.

Some lines of employment are likely to experience a greater growth in the next few years than they have lately experienced, and formed roofing is distinctly one of these. In the recent agitation which led to the adoption by many manufacturers of the pound instead of the area basis for selling sheet mill formed products, the fact was brought out that the use of the material had been retarded by unsatisfactory experiences of some consumers due to the use of material which was too light for the purpose, and the use of improper or too light material had been encouraged by the practice of selling by area. The use of the pound basis is expected ultimately to educate consumers to using heavier material, and thus cause a more rapid growth in consumption in the next few years than has lately occurred.

The latest sheet production statistics are those for 1910. In that year, there was produced 1,435,619 gross tons of sheets, 13 gage and lighter, and in addition, 712,137 tons of black plates for tinning, making a total of 2,147,756 tons. It is possible, when the total production of steel in 1911 fell so far behind that of 1910, that there was a slight decrease in sheet production, though it is not certain that there was any decrease. Production of sheets in the present year, barring accidents, is destined greatly to exceed the output of 1910. Sheet mill capacity has uniformly kept ahead of the demand since 1907, with the result that extremely low prices prevail. The sheet mills have been making a very large tonnage, but very little money.

Blast Furnace Capacity and Raw Materials

Reference was made in this department a week ago to the large blast furnace capacity now in existence in the United States, and to the certainty that raw materials could not be found in the near future to permit of the operation of all the capacity. Further discussion of so interesting a situation may not be without interest.

The compilation cited indicated a total blast furnace capacity in the United States of 44,500,000 tons, as such ratings go, not including some furnaces palpably unfit to operate under ordinary market conditions. By making an allowance of 10 per cent for relining and other stoppages and various physical considerations, the blast furnace capacity of the country appeared to be about 40,000,000 tons.

The conservative method of estimating followed by THE IRON TRADE REVIEW's annual compilations in the past few years took the production of 26,200,000 tons from July 1, 1906, to July 1, 1907, as a basis of the real capacity of the old furnaces, for northern pig iron averaged $20 a ton during that period and surely the existing furnaces made all the pig iron they could. Making allowance only for the absolutely new furnaces, the present capacity would be slightly over 34,000,000 tons. For this figure to be entirely correct, it would be necessary for the rebuilding and otherwise improving of blast furnaces since 1906-7 to balance precisely the capacity active in 1906-7 which has been abandoned. As a matter of fact, little capacity has been definitely abandoned, while on the other hand the change in conditions, particularly the great decline in pig iron prices, with very much smaller declines in coke, make it that a great deal of the 1906-7 capacity is not fit under present market conditions, or even perhaps with an advance of $1 or $2 a ton in pig iron. Indeed, since there is an open market in both pig iron and steel products, it may be asked whether our actual commercial capacity in present market conditions is materially in excess of the present output, which is at the rate of about 30,000,000 tons a year? If there are idle furnaces, which can operate at a profit, why do they not do so?

Thus, according to the view point, we may put our pig iron capacity perhaps at 30,000,000 tons, or at 34,000,000 tons, or at 40,000,000 tons. Modifying a well known saying, it may be said that if figures do not lie, sometimes their designations do, and when we say 40,000,000 tons, or 34,000,000 tons, or 30,000,000 tons, we must designate precisely what circumstances are in mind when the figure is mentioned.

The question is then reduced to the commercial conditions under which the furnaces must operate, the price they can secure for their pig iron, or the value it may have when converted into steel without change in ownership, and the cost of operating, involving chiefly the cost of labor and raw materials.

It is perfectly patent, as observed a week ago, that before 40,000,000 tons of blast furnace capacity were put in operation, the supplies of both coke and ore would fall down. The present production rate of 30,000,000 tons is only 75 per cent of 40,000,000 tons, or about 88 per cent of 34,000,000 tons. It will probably be admitted in all quarters that coke production at the moment does not fall nearly so far below the productive capacity. The *Connellsville Courier* last week made the statement that the production of Connellsville coke, at about 400,000 tons weekly, is within 10 per cent of the limit, and the amount of idle coking capacity outside the Connellsville region is not large.

As to coking capacity, there is a clear trend towards the erection of by-product ovens even when no additional blast furnace capacity is undertaken. Thus last week the Republic Iron & Steel Co. announced that it would erect a by-product coking plant at Youngstown with a capacity of 1,000 tons of coke daily, but no blast furnace erection is on its present program, and since the beginning of 1907 it has completed only one blast furnace, which was blown in a year ago.

The position of the iron ore industry is somewhat similar; its production and capacity will grow as the need for pig iron increases.

As a general summation of the situation, it may be said that the present blast furnace capacity is well in excess of the coke and ore supply, and that as the requirements for pig iron increase, more coke and ore producing facilities must be provided. Much additional blast furnace capacity will not be needed for a time, if the existing blast furnaces are all suitable for operation; if not, some of them will be taken out of the reckoning and others built.

MEN OF THE IRON TRADE

Rukard Hurd, secretary of the Minnesota tax commission, author of Hurd's "Iron Ore Manual," and an expert and recognized authority on iron ore values, received the honorary degree of doctor of philosophy June 19 at the fiftieth anniversary of the Pennsylvania Military College, from which Mr. Hurd was graduated 34 years ago, at the completion of a course in civil engineering. John Birkinbine, mining engineer, Philadelphia, conferred the degree on behalf of the board of trustees of the college.

Mr. Hurd's manual, a general reference, guide and handbook of the Lake Superior iron ore districts, is considered one of the most carefully prepared works of its kind ever published.

Mr. Hurd was born at Cincinnati, O., in 1858, and is of English, Scotch, Welsh and Irish descent. His ancestors emigrated to America in 1630. He has served as the secretary of the Cincinnati Produce Exchange; director of the Cincinnati chamber of commerce; director of the St. Paul chamber of commerce and represented the thirty-sixth district in the legislature of Minnesota in 1901. He was elected secretary of the tax commission of that state at the time of its organization, April 29, 1907.

He is now engaged in a study and original research in a new field of mineral literature — the standardization of the mathematics of iron ore values and the appraisal of iron ore as mined or in the ground. He has been in charge of the mineral valuation for the Minnesota tax commission, in grouping, classifying and preparing for assessment of nearly 1,500,000,000 tons of iron ore in Minnesota.

Herbert K. Scott, M. I. M. M., of London, Eng., has sailed for Newfoundland on professional business.

E. Holt Gurney, of the Gurney Foundry Co., Toronto, Can., is on a three months' pleasure and business trip to Europe.

Kirby Thomas, of New York, is making mine examinations in Quebec and Ontario.

Frederick W. Kelley has been chosen president of the Consolidated Car Heating Co.

J. D. Cox, president of the Cleveland Twist Drill Co., Cleveland, left last week on the Mauretania for Europe.

Rudolph Kauert, of Kauert & Doehler, machinery dealers of Toronto and Montreal, has gone to Europe on business.

Robert W. Ney, manager of the American Steel & Wire Co., Cleveland, left last week, with his family, for a trip to Europe.

F. C. Buckley has been appointed general manager of the Sterling Machine Co., Norwich, Conn., to succeed Robert R. Keith.

Stephen Badlam has been appointed assistant superintendent of the merchant mill at the Pennsylvania Steel Co.'s plant, at Steelton, Pa.

George Jackson, Ashland, Ky., has succeeded R. S. McGlum as chief engineer of the American Sheet & Tin Plate Co.'s plant at Chester, W. Va.

Edgar Palmer has been elected president of the New Jersey Zinc Co. of Pennsylvania, operating plants at Hazard and Millport, Carbon county.

C. T. Johnson, general manager of sales of the Republic Iron & Steel Co., Youngstown, will sail for Europe in the near future on a business trip.

Philip Gaspard, secretary and treasurer of the Fecheimer Steel & Iron Co., Allentown, Pa., has resigned his

MEN OF THE IRON TRADE

position and disposed of his shares to W. L. Fecheimer.

John G. Platt, mechanical representative of the Hunt-Spiller Mfg. Corporation, Boston, has been made sales manager, a newly created position, with offices in Boston.

F. R. Davis, of the General Electric Co., has been made first vice president of the Technical Publicity Association. He was formerly secretary of the organization.

Harry C. Shaaber, formerly manager of the Chantrel Tool Co., Millmont, Pa., has become manager of the pipe department of the Reading Standard Co., Reading, Pa.

J. H. Plummer, president of the Dominion Steel Corporation, has returned from an extended visit to England in connection with the finances of the corporation.

John E. Chapman is manager of the new office opened by the Wells Bros. Co., Greenfield, Mass., at 163 Oliver street, Boston. The company manufacturers taps and dies.

T. E. Tierney has succeeded A. J. Wade as master mechanic of the Louisiana & Arkansas railroad, with office at Stamps, Ark. Mr. Wade resigned on account of ill health.

W. C. J. Rambo and L. G. E. Bignell have formed a partnership to engage in mining and metallurgical engineering, with an office at 923 First National Bank building, Denver.

Lyman R. Gordon, head of the Wyman & Gordon Co., drop forgings, Worcester, Mass., accompanied by Mrs. Gordon and family, has gone to Europe for a three months trip.

S. V. Valentine, formerly superintendent of the Dunbar Furnace Co., Dunbar, Pa., is now superintendent of the Oxford, N. J., furnace of the Empire Steel & Iron Co., which recently resumed.

Price McKinney, senior member of the firm of Corrigan, McKinney & Co., Cleveland, spent several days recently in Crystal Falls, Mich., looking over the mines of the company in that district.

John Metcalfe, for the last 17 years mechanical engineer and draftsman with the F. E. Reed Co., Worcester, Mass., will sever his connection with the Reed-Prentice Co., the concern resulting from the consolidation of Prentice Bros. Co. and the F. E. Reed Co., June 30.

Samuel G. Thompson, acting superintendent of motive power and rolling equipment of the Philadelphia & Reading railway at Reading, Pa., has been appointed superintendent of both departments.

John Alexander, of the Harrison Safety Boiler Works, Philadelphia, was elected vice president of the Associated Foundry Foremen of Philadelphia and vicinity at the June meeting of that organization.

Chairman E. H. Gary and President James A. Farrell, of the United States Steel Corporation, have returned to New York from a several days inspection of the properties of the Corporation in the Chicago district.

R. A. Dugan, in charge of the sales department of the Chicago office of the Scullin-Gallagher Iron & Steel Co., St. Louis, has been appointed district manager, with offices at 1049-50 McCormick building, Chicago.

George W. Dickie, ship designer, of San Francisco, will be located at the yard of the New York Ship Building Co., Camden, N. J., for the next year superintending the building of ships for the Pacific Coast Co.

Frederick A. Pelter, until recently assistant superintendent of construction for the Tennessee Coal, Iron & Railroad Co., has been appointed assistant engineer for the H. Koppers Co., in charge of new construction.

Charles S. Walton, treasurer of the T. C. Dill Machine Co., Philadelphia, has been elected president of the Central Trust and Savings Co. to succeed H. M. Vancourt, who will continue as chairman of the board of directors.

James W. Hitchcock, special sales agent at Cleveland, for the Phillips Sheet & Tin Plate Co., Clarksburg, W. Va., sailed on June 15 for Europe on a pleasure trip. He expects to return the latter part of next month.

J. W. Keffer, manager of the Shelby Iron Co., Shelby, Ala., who resigned to take charge of coal properties recently purchased by him at Sebree, Ky., has been succeeded by L. W. Searles, of Birmingham, Ala. Mr. Searles has been consulting engineer for the Shelby Iron Co. the last two years.

Charles Feath, of Kansas City, Mo., was elected president of the American Iron, Steel and Heavy Hardware Association at its second annual convention, which has closed in Boston. The association voted to meet in Buffalo next year.

John E. Lonngren resigned as superintendent of the wire mill department of the Cambria Steel Co., Johnstown, Pa., effective June 15. He will be succeeded by D. S. Luckly of Monessen, Pa., for some time superintendent of the wire mills there.

B. H. Boyer, formerly agent for the Duluth & Iron Range, at Virginia, Minn., but more recently acting in a similar capacity at Gilbert, Minn., has been made general agent for the Range system, a newly created position. He assumed his duties June 15.

John Tod was re-elected president of the Bessemer Limestone Co., Youngstown, O., at a recent meeting of the board. Other officers re-elected were: R. C. Steese, vice president; C. C. Blair, secretary; J. R. Rowlands, treasurer, and Joseph G. Butler Jr., chairman.

C. D. Schmidt is in charge of the New York office, 276 Canal street, of the Universal Machine Screw Co., Hartford, Conn. The office was opened recently as a result of a demand caused by increased business. Mr. Schmidt is well known in the machine screw product world.

C. M. Orcutt, superintendent of department No. 1 of the Allegheny Steel Co., Brackenridge, Pa., has been appointed superintendent of departments Nos. 2 and 3, to succeed Ralph B. Curry, who resigned. John Busher succeeds Mr. Orcutt as superintendent of department No. 1.

L. C. Hanna was elected to the directorate of the Republic Iron & Steel Co. at a recent meeting of the directors of the company held in New York, to succeed Col. John Lambert. It was decided to increase the executive committee from five to seven members. This committee was reorganized, the following persons constituting the present committee: L. C. Hanna, G. B. Schley, E. W. Oglebay, James Campbell, John F. Harris and John A. Topping.

Ancient History Reviewed in Corporation Suit

Very Low Prices in Fabricating Due to Strong Competition—
President Huston Again Tells About the Plate Association

The examination of witnesses last week in the Steel Corporation hearings in New York brought out some interesting echoes of the panic days of 1907. The government counsel endeavored to show by this testimony that financial pressure was brought to bear upon certain holders of Tennessee Coal, Iron & Railroad Co. securities, with a view of forcing them to dispose of their holdings. The witnesses called in these connections were Oakleigh Thorne, former president of the Trust Co. of America, and Osmond Phillips, financial editor of The New York Times. Other subjects entered into more or less fully were: plate and other pools; the formation of the American Tin Plate Co.; the American Bridge Co., as a competitor; the taking over of the Troy Iron & Steel Co. and of the Lorain Steel Co. by the Steel Corporation; the so-called "Gary dinners"; how the Corporation sold pig tin to its competitors at a time when stocks in this country were exceedingly limited, and the troubles of tin plate dippers after the American Tin Plate Co. was organized. The government also endeavored to show that, as the result of an alleged ore monopoly by the Steel Corporation, the price of Lake Superior ore has been advancing steadily since 1901.

The witnesses questioned on these matters were, C. W. Bray, formerly president of the American Tin Plate Co. and of the American Sheet & Tin Plate Co.; W. P. Worth, of Worth Bros. Co. and of the Coatesville Rolling Mill Co., both of Coatesville, Pa.; Charles S. Trench, editor of The American Metal Market, and president of C. S. Trench & Co., New York; A. F. Huston, president of the Lukens Iron & Steel Co., Coatesville; Frank Tenney, secretary and assistant to the president of the Pennsylvania Steel Co.; J. V. W. Reynders, vice president of the Pennsylvania Steel Co.; A. J. Moxham, president of the A. I. DuPont de Nemours Powder Co., and Everett D. Arnold, now in the pipe supply department of the Standard Oil Co.

Huston Testifies

A. F. Huston, president of the Lukens Iron & Steel Co., was called upon, on Wednesday morning of last week to tell what he knew about the Plate Producers' Association. The following concerns, Mr. Huston said, comprised its membership: Carnegie Steel Co., American Steel & Wire Co., Illinois Steel Co., Jones & Laughlin Steel Co., Otis Steel Co., Lukens Iron & Steel Co., Worth Bros. Co., Central Iron & Steel Co., Crucible Steel Co. of America, Tidewater Steel Co., Glasgow Iron Co., and, later, the Cambria Steel Co. The first meeting was held at the Waldorf-Astoria, in New York, in 1900, and Messrs. C. M. Schwab, Gilbert McCauley, W. L. King, William Park, W. T. Worth and William P. Palmer were among those present. At this meeting, the discussion centered on the desirability of forming an association to fix reasonable prices and to prevent destructive competition, such as had prevailed in the years 1892 to 1896. At this meeting, a number of the representatives of plate producers had with them no records of the tonnages their companies had produced in the preceding year; hence the matter of making allotments was not finally decided. At the meeting which followed immediately after the final fixing of allotments, Judge Gary was present as a representative of the Illinois Steel Co. At this meeting, a form of agreement was adopted and this was put into the hands of Mr. Huston in order that he might have it printed and distributed among the various members of the association. Some of these agreements were signed and some were not signed. These forms were later called in, another agreement having been adopted. Under the latter agreement the association operated until 1904. The association maintained a fund of $100,000, this being obtained from the members, who paid in $1,000 for each 1 per cent they were allotted of the association's total tonnage. The purpose of this fund was to provide for the imposing of fines on any members who broke their agreement. In spite of the fact that the members often cut the fixed prices established at the meetings, no fines were ever levied. The secretary was W. C. Temple, of Pittsburgh, who received reports of tonnages produced each month, etc.

In cross examination by Mr. Lindabury, the witness stated that the meetings were generally held once every month. He did not remember seeing Judge Gary at any of the meetings outside of the one the latter attended in 1900. Mr. Huston was then excused and he was followed by C. W. Bray.

Mr. Bray's Testimony.

Mr. Bray's cross examination, which was conducted by Mr. Severance, was concerned mainly with the size and capacity of a number of companies which were later merged into the American Tin Plate Co. The witness, in submitting his testimony, frequently referred to a memorandum. The nature of this memorandum and the source of the data contained in it were a ground for considerable argument between Judge Dickinson and Mr. Severance, but it finally appeared that the memorandum was based on information obtained from Mr. Kimball, chief engineer of the American Sheet & Tin Plate Co., at Pittsburgh, and Mr. Bray was permitted to make use of it. The witness, in re-direct examination by Mr. Corneau, told what he knew regarding the value of the mechanical equipment, real estate and other properties belonging to various companies at the time they sold out to the American Tin Plate Co.

Mr. Bray, during his testimony, submitted the accompanying list, which shows what was done with the tin plate mills dismantled by the American Tin Plate Co. after its formation. The mills dismantled numbered 121, most of them becoming inactive in the years 1900 to 1902. As is shown in the table, only 33 of them were scrapped.

Frank Tenney, secretary and assist-

ant to the president of the Pennsylvania Steel Co., since 1901, was questioned by Mr. Colton about ore contracts entered into by his company during the years 1901 to 1907, inclusive. Mr. Tenney has had charge of this department of the Pennsylvania Steel Co. since 1895. Mr. Colton's intention was to show by these contracts that the price of iron ore ascended constantly after 1901. David A. Reed, of counsel for the defense, objected to these contracts on the ground that they were incompetent, irrelevant and immaterial. He contended that the correct way to ascertain the market price of iron ore was to refer to the trade journals.

Mr. Reynders Testifies

J. V. W. Reynders, vice president of the Pennsylvania Steel Co. and in charge of operations at the Steelton, Pa., plant of that company, appeared as the witness at the hearing on Thursday morning. Mr. Reynders was questioned by Judge Dickinson about his knowledge of the bridge business. He stated that prior to his election to the vice presidency, six years ago, he had had charge of the bridge building end of his company for a great many years. Mr. Reynders went over a list of companies which were in active competition at the time the American Bridge Co. was organized. He stated that the competitive capacity of the country in fabricated structural steel in 1900 was 950,000 tons; of this total the American Bridge Co. controlled 500,000 tons. He mentioned 250,000 tons as the non-competitive capacity of the country in 1900; by "non-competitive" he meant the companies which do a strictly local business in the various parts of the country. The independent fabricating plants of the country which had rolling mill affiliations in 1900, controlled 10 per cent of the total capacity of the country.

Mr. Reynders stated that in his opinion the American Bridge Co. took 59 per cent of all the work bid on in 1911, irrespective of who made the bids.

In cross examination, Mr. Reynders stated that of the 27 members of the American Bridge Builders' Society, nine had been formed since the organization of the American Bridge Co. He stated that independent fabricators who are not affiliated with rolling mills are able to buy their materials from eight different concerns. Mr. Lindabury further plied the witness with a line of questions designed to show that the fact that a fabricator did not have a rolling mill was no disadvantage. The witness, however, was of the opinion that it was a disadvantage.

Mr. Reynders stated that the period of integration in the steel business began in the early nineties and was due to the bad conditions and the very destructive competition then prevailing.

The witness stated that at the time of its formation the American Bridge Co. controlled about 42 per cent of the total structural capacity of the country.

Mr. Lindabury tried to show that the Pennsylvania Steel Co. and the Pennsylvania Railroad Co. were very closely allied, pointing out the large rail rolling capacity of the steel company. To this the witness would not agree, although he admitted that the Pennsylvania Steel Co. furnished large quantities of rails and bridges for the Pennsylvania railroad.

Mr. Lindabury also endeavored to show that the various structural companies which were left out at the formation of the American Bridge Co. had, with very few exceptions, greatly increased in capacity.

The witness stated that the present capacity of the American Bridge Co. is 31 per cent of the country's capacity.

Ruinous Prices.

Judge Dickinson, in re-direct examination, asked the witness about the prices at which work had been taken by his company during the past year.

"At a ruinously low figure for most of the work," said Mr. Reynders. He explained that it was cheaper to take work at such a figure, however, than to let the plant stand idle. Mr. Reynders stated that during the past few years the American Bridge Co. has been quoting very low prices and hence its competitors have been forced to do likewise.

The witness stated that his company had not been asked to bid on any work for the Harriman lines during the past four years. This work has uniformly been awarded to the American Bridge Co.

Thought It Was Five Millions.

A. J. Moxham, president of the A. I. Du Pont de Nemours Powder Co., Wilmington, Del., was questioned about the Lorain Steel Co., which operated plants at Lorain, O., and Johnstown, Pa., and which later became the property of the Federal Steel Co. The founders of the company were A. V. Du Pont, Tom L.

Dickinson and Lindabury Have Sharp Clash of Words

During the examination of J. V. W. Reynders, on Thursday, an unusually sharp tilt between Judge Dickinson and R. V. Lindabury threatened to disrupt the proceedings entirely. The judge was questioning the witness on the character of the competition between the American Bridge Co. and its competitors.

"At what prices," asked Judge Dickinson, "has the work secured in competition with the American Bridge Co. been taken?"

"As a rule, at ruinously low prices," replied Mr. Reynders, and the Corporation counsel began to display signs of restlessness.

"Has not the Bridge company uniformly been making very low bids against its competitors?"

"Yes, it has."

"I must object to your putting the answers into the mouth of the witness," interrupted Mr. Lindabury with much heat.

"I know no one who has been doing that more than you have," retorted the Judge.

"I object," continued Mr. Lindabury, "to your taking advantage of the fact that there is no judge here to rule on the proceedings. You have been practicing law long enough to know—"

Here Judge Dickinson rose to his feet, put his hands in his trouser pockets, glared at Mr. Lindabury and said with much earnestness:

"I don't propose to submit to any personal criticism. I am willing that you should enter any objections in the records that you care to, but I will not stand for anything more."

The two lawyers looked each other between the eyes for a long moment and it took some time to relieve the tension.

Johnson and Mr. Moxham, but many other stockholders were taken in later. At the time it was taken over by the Steel Corporation, its products were girder rails and special shapes, and it made 90 per cent of the street railway supplies produced in this country. Negotiations for the sale of the Lorain Steel Co. were opened by Samuel Mather, of Cleveland, and were concluded in the office of J. P. Morgan. Mr. Moxham did not recall the price paid, but thought it was about $5,000,000.

Everett D. Arnold, the next witness, stated that he was connected with the Troy Iron & Steel Co. from 1886 to 1897. This company, which represented an investment of $4,000,000, sold out to the Steel Corporation in 1903. Its stockholders included John D. Rockefeller, H. H. Rogers, Charles M. Pratt, Benjamin Brewster and others interested in the Standard Oil Co. and its main product was pipe, which was sold to that concern.

Investigators Get Together

In the midst of the examination of W. P. Worth, on Tuesday, Samuel Untermeyer and Edgar H. Farrar, who are conducting the "money trust" investigation in the Custom House, New York City, took a little recess and decided to see how the other investigation, that of the Steel Corporation, was proceeding. Their entrance into the room in which the Steel hearings are being held, was marked by a brief intermission, during which the opposing counsel welcomed the visitors.

Mr. Arnold told about experiments which were made with northern New York ore and how the company was able to make pipe of good quality from this ore by the basic Bessemer process. The cost of this process was high, however, and the plant was forced to shut down in 1897, not being able to compete with the makers of pipe who employed the basic open-hearth process. It was never operated after that date. Mr. Arnold has since been connected with the pipe supply of the Standard Oil Co., at 26 Broadway, New York.

Testifies About Certificates

In the hearing of the Steel Corporation dissolution case Monday, John F. Tierney, of Moore & Schley, was questioned by Judge Dickinson regarding certificates of Tennessee Coal, Iron & Railroad Co. stock held by that firm on or about Nov. 1, 1907. The firm held 24,777 shares pledged as collateral by regular clients to secure accounts, 71,700 pledged as collateral on loans made to customers, 1,300 borrowed shares, 13,384 which were in safe keeping and 10,000 which were held in safe keeping for a certain individual, name not given. These securities were not current as collateral in October and November, 1907. So Moore & Schley exchanged 150,000 with Col. O. H. Payne for other securities, 15,000 with the First National Bank for Steel Corporation bonds, and 20,000 with the Steel Corporation for Steel bonds. The witness said Moore & Schley's loans on Nov. 1 were from $30,000,000 to $40,000,000.

Mr. Lindabury tried to show that Tennessee stock was regarded as poor collateral then, but the witness would not admit that this was true.

In the afternoon, Mr. Lindabury asked him if Mr. Schley had owned any of the Tennessee securities hypothecated by Moore & Schley for securing loans. Mr. Tierney stated that he had and that this stock had been turned over to the firm by Mr. Schley in order to secure his private account.

Concessions to American Bridge Co.

Foster Milliken was the next witness. He stated that in 1882 he became interested in the firm of Milliken, Smith & Co., which acted as agents of the Phoenix Iron Co. Later, in 1888, with his late brother, he founded the firm of Milliken Bros., Inc. Mr. Milliken was questioned about the capacities of a large number of concerns which existed in a state of competition in the manufacture of bridges and other structures at the time of formation of the American Bridge Co. He stated that the Bridge company, when it was organized, took over about 80 per cent of the "heavy" capacity, controlled by firms which did the so-called "heavy" structural work of the country.

Mr. Milliken told about a visit which I. Gifford Ladd had paid him in 1900 for the purpose of persuading him to join him in a movement which was to lead to the formation of the American Bridge Co. This attempt by Mr. Ladd was unsuccessful.

Mr. Milliken also told about a meeting held in Charles M. Schwab's office, at which the leading independents complained of the rate which they were forced to pay for raw material, f. o. b. cars, Pittsburgh, claiming that the American Bridge Co. did not have to pay the full market price. Schwab presided at this meeting and Joshua Hatfield, president of the American Bridge Co., replied to this charge by reading some figures. "Mr. Schwab tried to coach Mr. Hatfield in his remarks," said Mr. Milliken, "but he did it too late, for Mr. Hatfield's figures showed that he was paying one-tenth of a cent less per pound than the market price."

Mr. Severance then took the witness in cross examination.

"In your testimony you have declared that, at the time of its formation, the American Bridge Co. took over 80 per cent of the heavy capacity of the country. Please state now what percentage of the heavy capacity was controlled by the Pencoyd Iron Works, Post & McCord and the other individual concerns."

The witness objected to being questioned in such detail, saying that he had mentioned the figure, 80 per cent, as representing his own idea of the percentage of capacity and not the compilation of percentages of the separate concerns.

After a lengthy argument, in which everybody took a hand, the witness took a paper and pencil and figured out the percentages of the capacity for heavy work of the various companies as follows: Pencoyd, 18 per cent; Post & McCord, 11 per cent; Union, 8 per cent; Trenton, 8 per cent; Lossig, 8 per cent; Rochester, 8 per cent; Edge Moor, 12 per cent; Pittsburgh, 12 per cent; Elmira, 12 per cent; Shiffler, 11 per cent; Keystone, 8 per cent.

"But that makes a total of 116 per cent," persisted Mr. Severance.

The witness then made the following corrections: Pencoyd, 15; Post & McCord, 9; Union, 7; Trenton, 7; Lossig, 7; Rochester, 7; Edge Moor, 11; Elmira, 11; Pittsburgh, 10; Shiffler, 9;

Mills dismantled by the American Tin Plate Co. after its formation, and how they were disposed of:

Sold, complete:—
Beaver Tin Plate Co., Lisbon, O., 7.
Canonsburg Iron & Steel Co., Canonsburg, Pa., 5.
Total—12.

Moved to going plants:—
American Tin Plate Co., Montpelier, Ind., 6.
Champion Iron & Steel Co., Muskegon, Mich., 6.
Cincinnati Rolling Mill & Tin Plate Co., Cincinnati, O., 4.
Cumberland Steel & Tin Plate Co., Cumberland, Md., 5.
Falcon Tin Plate & Sheet Co., Niles, O., 6.
Hamilton & Co., West Newton, Pa., 2.
Irondale Steel & Iron Co., Middletown, Ind., 6.
Johnstown Tin Plate Co., Johnstown, Pa., 2.
National Tin Plate Co., Anderson, Ind., 7.
Ohio River Sheet & Tin Plate Co., Rochester, Pa., 2.
Reeves Iron Co., Canal Dover, O., 6.
Star Tin Plate Co., Pittsburgh, 8.
Total—60.

Used as Spares:—
Atlanta Steel & Tin Plate Co., Atlanta, Ind., 6.
Ellwood Tin Plate Co., Ellwood City, Pa., 6.
Washington Steel & Tin Plate Mills, Washington, Pa., 4.
Total—16.

Scrapped:—
Baltimore Tin Plate Co., Baltimore, 2.
Blairsville Rolling Mill & Tin Plate Mill, Blairsville, Pa., 2.
Britton Rolling Mill Co., Cleveland, 3.
Great Western Tin Plate Co., Joliet, Ill., 4.
Marshall Brothers & Co., Philadelphia, 6.
Nishannock Sheet & Tin Plate Co., New Castle, Pa., 6.
Wallace Banfield & Co., Irondale, O., 4.
Sommers Bros. plant, 4.
Stickney plant, 2.
Total—33.

Keystone, 7. He said these percentages were of the business controlled by the American Bridge Co., which represented 80 per cent of the country's heavy capacity.

Of the entire country's heavy capacity in 1900, the witness then figured that the Phoenix company controlled 12 per cent; King Bridge Co., about 3 or 4 per cent; Milliken Bros., 2 per cent; Pennsylvania Steel Co., 4 per cent; Brown, Ketcham & Co., 1 per cent, and Cornell, 1 per cent. Mr. Milliken did not claim these figures to be entirely correct, but said they were only roughly made.

Mr. Milliken was questioned further about the meeting he had mentioned, at which Mr. Schwab presided. This took place after Mr. Schwab's resignation from the presidency of the Steel Corporation. Mr. Milliken stated he was invited by Mr. Baker, of the Carnegie Steel Co.'s selling department, and Messrs. Hatfield, Schwab, Milliken, Hay and Marshall were among those present.

Adjourned Till Thursday

Attorneys for the government and the Steel Corporation agreed to adjourn the hearings until Thursday, to allow Judge Dickinson to go to New Haven, to attend the commencement at Yale, from which his son graduates this week.

TO DEVELOP MINES

Empire Steel & Iron Co. Will Operate Mt. Hope Deposits.

The Mt. Hope iron ore mines in Morris county, N. J., one of the best known magnetite properties in that state, are about to be operated on a more extensive and improved scale by the Empire Steel & Iron Co., Catasauqua, Pa., and it has been arranged to expend $300,000 in the enterprise. The holdings comprise about 1,700 acres of mineral lands which, it has been shown by diamond drilling and exploration work, contain a large body of high grade magnetite ore. These ore reserves are estimated by engineers to amount to at least 5,000,000 tons.

Several years ago the Empire company erected at the Mt. Hope mines, a large modern power plant, built by the Ingersoll-Rand Co., and a separating plant which was installed by the Allis-Chalmers Co. At that time new shafts were sunk to the ore body, which lies from 300 to 1,000 feet below the surface. The additional capital will be largely devoted to the putting down of additional shafts and to underground development work. The improvements will require about one and one-half years to complete.

COKE PRICES HIGH

On Contract Assert Furnaces—Some Conditions Favor Sellers.

Probably the most interesting price situation that now confronts the iron and steel industry is that surrounding the market on furnace coke for last half delivery.

At the moment, the market for Connellsville contract coke is deadlocked between the operators and the furnace buyers, especially in the east and comparatively few contracts for last half delivery have yet been made. The great majority of the Connellsville district interests are now asking $2.50 furnace for their last half product. Buyers at this time are not willing to concede any such value to the market. In the east, the furnace men are talking for $2 coke.

The Connellsville operators contend that their asking price is justified by present and prospective blast furnace operations and is in accordance with the values ruling in the past under similar conditions. Furthermore the impossibility of getting out a full production of the Connellsville region owing to existing shortages of labor is being emphasized. Some interests are now running their mines on a six-day schedule and their ovens on a five day weekly schedule.

A statement of the blast furnaces now idle, which in all probability will resume in the near future, offers an interesting study in connection with the present contention over the real stage of coke values for the last half period.

The furnaces which have recently gone out for relining or rebuilding, the dates of their probable resumption and their estimated monthly coke consumption are as follows:

One Worth, this month	15,000
One Bethlehem, July 1	15,000
Girard, July 1	12,000
Northern, this fall	7,000
Total	49,000

The furnaces now ready for resumption which are expected to go in within the next 30 days, the probable dates of their lighting and the estimated monthly coke consumption are as follows:

Andrews & Hitchcock, June 25	11,000
One Aliquippa, July 1	16,000
Josephine, June 20	11,000
Corrigan, McKinney at Cleveland, July 10	11,000
Steelton, going in	.....
Steelton, July 10	12,000
Central, Harrisburg, going in	7,000
Brier Hill, going in	10,000
Lackawanna, July 1	12,000
Sharpsville, July 1	7,000
Total	97,000

In the class of furnaces likely to blow in soon but not yet positively decided are one Lackawanna Iron & Steel Co. at Lebanon; Fannie West at Middlesex; Ella at Middlesex; Alice, at Sharpsville; Kitanning, McKeefrey; one Thomas at Hellertown; Hall at Sharon and one Lebanon Valley at Lebanon, or a total of nine additional stacks.

It is pointed out that in February, 1910, pig iron production was at the rate of 31,290,000 tons per annum and contract coke sold at $2.90 ovens. On June 1, of this year, pig iron production was at the rate of 30,000,000 tons per annum. If the furnaces now relining and those ready for resumption go in at the dates they are now contemplating, pig iron production upon the basis of a ton of coke per ton of iron will be increased by 140,000 tons. In other words, the coke operators maintain, there is a reasonable prospect that a production rate of 31,400,000 tons will be reached in the last half.

In 1907, it is pointed out by the operators, the price of contract furnace coke was $3 in March and April. In May and June, it dropped to $1.80 to $1.90, ovens. By the first of August, it had again reacted to $3 ovens.

The present weakness in spot coke, it is stated, is due to the surplus coke coming upon the market through several furnaces having gone out recently for relining.

BREAK GROUND

At Morgantown, Pa., for Pittsburgh Mill Site, Which is Inspected.

Pittsburgh, June 18.—Lakin C. Taylor, one of the directors of the Pittsburgh Sheet & Tin Plate Co., with J. E. Schlieper, general manager of the Schlieper-Daae Co., engineers of Pittsburgh, and E. Cooper Shapley of Philadelphia, who represents eastern financial interests, were in Morgantown, Pa., last week going over the site of the new plant to be located there by the company, and the ground was broken for the construction of the main buildings of the mill.

Will Build Hoop Mill

The United States Steel Corporation has authorized the construction of a new hoop mill at the McCutcheon plant of the Carnegie Steel Co., Pittsburgh. The improvement will cost about $300,000.

The Portsmouth Steel Co., Portsmouth, O., has inaugurated weekly meetings of department heads for exchange of ideas and discussion of matters pertaining to the operation of the plant.

Taxpayers Should Demand Protection of Health

So That Workingmen Will be Surrounded by Favorable Conditions at Home as Well as in the Shop—Preventing Sickness and Death

By Thomas Darlington, M. D.

Coincident with the world's general progress much has been done in recent years for relief from those conditions of environment that affect us unfavorably, for prevention of disease and physical suffering, for the promotion of longevity and happier conditions. Such work has made possible the building of the Panama canal, and many great achievements which could not otherwise have been accomplished.

Commerce depends much on sanitation and has at times been seriously impeded by infectious diseases. Ports containing cholera lose their commercial advantages.

Some Fundamental Considerations

So it is beginning to be understood and soon will be generally realized that much effort has been wasted in the past and much efficiency has been lost by lack of attention to industrial hygiene. Matters of this kind have been regarded as philanthropic, and therefore not to be considered in connection with business enterprise. Not that philanthropy is of no importance, but the business transactions of the world have for their basis money. Any proposal is measured by finance, and only those things that save money are considered. While the inspiration has arisen from physicians and philanthropists, economy and saving of money have played a large part as the ultimate cause of sanitary reform, and will continue to do so.

That it pays to safeguard a workman from loss of limb or other accident by covering gears or placing guard-rails about pulleys and belts is a conclusion that is obvious. Nevertheless until recent years but little had been done. Not so obvious, but just as far reaching in its results is the safeguarding of employes against disease.

It is axiomatic that efficiency depends on health.

It is, therefore, of great commercial importance that we do everything not only to prevent disease, but to raise the standard of health to the highest point.

Furthermore, disease causes a large expenditure of money. It is essential, therefore, that workmen be surrounded with proper safeguards not only for the prevention of accidents, but also prevention of sickness.

The health of any community depends on the health of its individual components. It depends, therefore, on the persons themselves, on those responsible in various degrees for the daily life and work in a community, and upon those who are responsible for the making and enforcement of laws.

So the responsibility may be divided under three heads:

(1) Personal hygiene or care by employes of themselves;

(2) Care by a company within its inclosure;

(3) Care by authorities (town, city, state and national government) in making and enforcing of laws.

While public hygiene can be enforced, personal hygiene is a matter that must largely be taught.

Personal Hygiene

The care of the individual, those things which are largely under his control and which he should do for himself are: the regulation of his meals—the amount, character, and mastication of them; the amount and character of drink; hours of rest and sleep; ventilation of rooms; personal cleanliness, for clean bodies and clean clothes lessen the chances of blood poisoning in accident cases; washing of hands before meals; daily washing of feet; proper fitting of shoes; amount and kind of clothing; care of the eye, ear and nose; brushing of teeth; regularity of bowels; the cultivation of cheerfulness—for the mind has much to do with the body and especially with metabolism; regularity of work.

The first condition of health is fruitful toil. Work is not a necessary evil, but our greatest safeguard against disease and advancing old age.

The individual should be taught that definite results are to be obtained from definite conduct.

It has frequently been asserted that a large percentage of accidents occurring about plants are due to fatigue. From observation and inquiry it would seem that the greatest number of accidents are due to carelessness, some to ignorance, some to alcoholism, and in other cases a lack of proper guarding of machinery; still fatigue must be considered.

The determinations of physiologists show that constant and rapid motion of a muscle produces fatigue by the accumulation of lactic acid and carbon dioxide within it.

It is, however, reasonable to suppose that fatigue is due not alone to accumulation of acid within muscles, but also to a lack of carbohydrates caused by improper feeding, or to excess of alcohol, or to deranged metabolism—from lack of oxygen, or to loss of sleep, or the condition of the skin, or the amount of fluid taken, or as the result of putrefaction in the intestines and the formation of certain aromatic bodies and absorption of them in the system.

If this be true, what a field of effort is opened to us for the study and correction of such condition; how easily we see that loss of efficiency can be connected with matters of personal hygiene—how great the importance to both employer and employe of education in such matters.

Sanitation by Employing Companies

Under the second head come those matters relating to health that should be worked out within the plants. They relate to the furnishing of a wholesome supply of drinking water, with regulation of its temperature and method of distribution; adequate washing facilities; a sufficient number of properly constructed, clean, light and well ventilated toilets; proper sewage disposal; good ventilation with prevention of fumes, dust and smoke, or proper disposition of them; clean floors and yards; proper methods of heating in winter and cooling appliances for heated work-places in summer; good lighting; provision for first aid; and possible consideration of lunch and rest rooms.

In many plants such matters as these have already been taken up with those in charge. In building plants it is well to keep such matters in mind, for if included in construction their cost would be less.

I cannot too strongly urge that when money is available for welfare or sanitary work, it be spent first for the purposes just enumerated, rather than for the building of clubhouses or reading rooms, or for lectures, playgrounds, rec-

*Paper read at meeting of American Iron and Steel Institute at New York, May 17, 1912.

reation centers, planting of trees, flower gardens, or visiting nurses. For, while these are desirable of themselves and appeal to the general public, they are not by any means of first importance. Nor should the money be expended for the correction of town or city conditions, because these things should be the care of the body politic, the community as a whole.

Furthermore, one must keep in mind that work of such character must be limited, that too much paternalism is unwise and against public policy. What these limits are only the future can decide. At present our first consideration should be the safety and health of the workmen within the plant.

Sanitation Under Public Authority

This brings us to the third heading, What Should Be Done in Making and Enforcing of Laws—the object of this evening's paper.

After long and careful study, I find that the proper standard of health, and, therefore, efficiency, cannot be maintained in the iron and steel and allied industries because of the lack of proper laws and the inadequate enforcement of existing laws by national, state and local authorities. Enormous sums of money are paid in taxes for which there is no adequate return.

Health departments are never fully equipped. Very few deserve the name, and some are simply a name. In the past and even today in the majority of places, matters which pertain to public health and to hospitals have been and are largely matters of private charity.

A healthy organism can adapt itself to its surroundings, whether in the Arctic Circle or at the Equator, but it cannot adapt itself to bad milk from diseased cattle, impure food, polluted water, dirty streets, putrid garbage, fly-breeding manure heaps, mosquitoes, bad drainage, crowded sleeping rooms, foul air and contagion.

The regulation of such condition is chargeable not to employer or employe, but to the city, town or state as a whole. Such matters are as much the care of the public as are schools, fire, or police, and they should not be left to the haphazard of charity. Nor should they be left entirely to those whose duty it is to enforce the laws. These officials are ofttimes absolutely dependent for their daily bread upon the persons over whom they are called to exercise authority, with the result that the laws are but indifferently administered.

The losses entailed are largely calculable. When we consider the loss in wages, loss of time in school and cost to the state from lack of promotions, sickness in hospitals, drugs, doctors, nurses, undertakers, the effect on the family from the loss of the father, the wage earner, and a host of things too numerous to mention here, the economy of hygienic measures becomes apparent.

But we must go further: who shall measure the loss in efficiency of a workman if a member of his family is ill and his mind is not upon his work? How much also has this mental abstraction, due to anxiety, to do with accidents?

Cities and towns should be stimulated and guided to action, for many have suffered seriously from the apathy of their members.

Some Significant Figures

Death rates are falling wherever the mandates of hygiene and sanitary science are obeyed. While in many places much has been accomplished, other places are still in the condition of sanitary science of 30 years ago.

A study of causes of death shows that, in general, but 4 per cent die from old age, 4 per cent more from violence, while 92 per cent die from disease. Of this latter, nearly one-half are due to diseases of environment; that is, to diseases which are the concern of health authorities, which by proper supervision could be wholly eliminated. There is no necessity for deaths from typhoid fever, tuberculosis, or diseases of like character. They are wholly preventable.

The determination of the necessities of the various towns is based principally on the death rates and general inspection. Taking 15 of the principal towns visited, excluding the large cities, the death rates averaged 19 per 1,000—easily double what it should be and at least one-third more than the rate of some cities of larger size.

For instance, Minneapolis with over 300,000 population has a death rate of 8.63, and even New York and Chicago with their dense population of heterogenous characters have death rates of 15.1 and 14.5.

The basis of sanitary work is registration of vital statistics. Not one state in the Union has a complete registration of births, and fully one-half of the country has no registration of deaths.

Importance of Milk Supply

Of the matters that need remedying by the authorities, certain things stand out more prominent than others. That which is pre-eminent—so far as it affects the growth, health and life of children in the home—is the condition of the milk supply.

This is a matter of vital importance. Not alone does it affect children, but it stands second as a cause of typhoid in adults. And, although the agitation for wholesome supplies of clean milk has been going on throughout the country for several years, in many places nothing has yet been done.

In a number of towns, where the industries connected with the institute are located, I have taken occasion to visit some of the principal sources of milk supply and they could not be worse. In cities advanced in matters pertaining to health, it is usual to score dairies upon a card on the basis of 100. Using such a card, some places scored eight or ten, other two or three, and to some I was unable to give a single point.

Contagious Diseases

Again, among children it is noticed that the death rates from contagious and communicable diseases are high. It has been shown that such diseases are largely spread through the medium of public schools. The approved method of control of such a condition is by a system of medical school inspection and proper quarantine and disinfection, and the reporting of cases by physicians. But such a thing as medical school inspection is almost unknown, except in a few large cities, and even there it is not practiced to its fullest extent, while quarantine and disinfection are largely left to the family physician.

In many instances, cases of contagious disease have no physician and are not reported at all, thus giving opportunity for the spread of the disease to others.

Little or no provision has been made for proper care of contagious disease among adults.

Contagious disease hospitals are lacking everywhere. In two places it was noticed that school houses, costing more than $125,000 each had been erected, but at each place the contagious disease hospital (or, as they properly term it, "the pest house") cost only $125.

Further study of death rates shows that the mortality from tuberculosis and other diseases of the lungs are high. It takes but little investigation and study to find the principal causes. Among these is foul air.

Foul Air

Crowded sleeping rooms are found everywhere. It is conceded by sanitarians that the least possible space per person in such apartments should be 400 cubic feet, and the air should be changed hourly; yet almost everywhere workmen were found occupying much less space, frequently less than half that amount—with no windows open and no system of ventilation, the beds often continuously occupied by the interchanges of day and night shifts, those working at night taking the place in

bed occupied by those that work in the day and conversely.

Metabolism—that is, the body processes and chemical changes that take place in the tissues—cannot be properly carried on under such conditions, especially the oxidative processes. So a lack of fresh air, and the breathing of expired air in sleeping rooms, unfits a man for work. This causes a loss of vigor, lowered vitality, loss of appetite, anæmia, and loss of resistance to disease.

Recent physiological research shows that under such conditions the body may not get rid of its heat, a feverish condition thus supervenes, and there is a consequent waste of fuel.

These crowded and ill-ventilated rooms were frequently found in the back of saloons or above them. Many workmen, in their desire to save, choose to board at such places, because board is furnished at the low rate of $3.50 per week. With the present high cost of living, this appeals strongly to the single laborer, and the saloon makes its profit from the sale of intoxicants. The combination of alcohol and foul air readily accounts for disease.

In diseases of such character, early diagnosis is of prime importance. In lung diseases, the sputum must be examined microscopically. In the larger cities this is done by a bacteriologist at the expense of the city. The bacteriologist in connection with the health department diagnoses not only tuberculosis, but diphtheria, typhoid and malaria. Such assistance is needed everywhere, but is almost universally lacking.

Water Supply

In a large percentage of the plants, and in towns controlled by the industry, the drinking water supplies belong to the companies themselves, and care has been taken to purify and protect such supplies. But in many of the towns visited, the town water supplies were found polluted, and in others so unattractive by the amount of turbidity due to the mud and silt they contained, especially during the spring freshets, that they were useless even for washing, not to mention drinking purposes.

Inasmuch as typhoid, diarrhœa and dysentery are largely spread by polluted water, the necessity for better municipal water supplies is obvious.

Garbage is generally not collected and fly-breeding stable manure is permitted to be heaped up beside stables and in back alleys throughout the year. Many towns are without sewers. Very few have any system of sewage disposal.

In a number of places where there are no sewers, cesspools take their place and these are connected with limestone caverns, and no one knows where the sewage goes. It frequently happens that a neighbor pumps it up as well water.

So I repeat, not only conditions surrounding the man at work must be guarded, but also those conditions surrounding him when away from work. Of what avail is the furnishing of wholesome water to the man when he is at work if he must take a polluted supply when he returns to his home?

Summary

Thus I might go on enumerating the various sanitary undertakings resting as a duty upon cities, towns and villages; but the instances I have given are enough to show the necessity for action. As large taxpayers those who manage and control plants should exercise their prerogatives in demanding that public authorities perform their proper functions in promoting the health and happiness of the people.

Summarized, these duties well performed mean pure air, wholesome water, an uncontaminated food supply and relief from those factors that detract from physical comfort. They mean better work accomplished and thus economy to employing companies by increased industrial efficiency. They mean decreased loss of time due to preventable illness. They mean decreased death rate from preventable diseases. They mean prevention of the spread of communicable diseases. They mean betterment of living conditions. And finally, they mean contented workmen—and contentment is greatly to be desired.

May Operate As Car Works

Pittsburgh, June 18.—Announcement is made of the sale of the property and plant of the New Castle Forge & Bolt Co. for foreclosure, proceedings being brought by the trustee for the bond holders of the defunct company. The property has been bought in by the same trustee for the bond holders, and a new company is being considered which may be chartered in the near future to take over and operate the plant as a steel car works. The interests associated with this new enterprise include W. H. Schoen, formerly of the Pressed Steel Car Co., E. N. Ohl, George P. Rhodes and A. B. Berger. The new company, it is understood, should it become organized, will operate under the name of the New Castle Steel & Iron Co., and in addition to manufacturing steel cars, will manufacture steel car trucks and other accessories. Mr. Ohl stated that the plans were still unsettled, but that some definite steps would likely be taken within the next ten days.

BRITISH IRON TRADE

Progress Reported in all Pig Iron Districts—Prices Advance.

Office of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,
Birmingham, Eng., June 8.

Unchecked progress is still the report from all the pig iron districts. The "bearing" movement of a week ago has been entirely ignored by the smelters, who have no difficulty in getting rid of their iron at recent prices. In the Sheffield district, increases of price have been found possible. Nearly all brands of pig iron in that district have realized an advance of one shilling to 1s 6d and there are constant complaints of inability to obtain sufficient supplies. The scarcity in the Sheffield district has led to further buying of Cleveland pig iron, although that kind of purchase is practically unprofitable in Sheffield. For Cleveland iron, demand is not quite so keen as it was, but consumers are well contracted, and that market is very subject to public influence. The slight fall in the price of American pig iron immediately inspired a rush by weak holders to get rid of their warrants. The local price fell during the week 6d per ton, but there was nothing corresponding to this decrease in any other branch of the trade. Yesterday's quotation was 53s 11d ($13.20) for No. 3 iron, with 54s 8d ($13.38) three months. The amount in store at Cleveland is 340,000 tons.

The completed exports for the month of May were very satisfactory, reaching 112,000 tons, or about the average for May, which is always a good month. North America took only 17,000 tons, as compared with 40,000 tons a year ago. The decrease in stocks still continues, being now 130,000 tons below the prestrike period. In the Birmingham district, prices maintain their recent high level, although the keenness to buy is not quite what it was. Everybody expects a strong revival of buying between now and Quarter Day a month hence. Coke is slightly easier in price, a change which is much welcomed at the furnaces. For East Coast hematite, sellers easily make 78s ($19.10) in Sheffield, and 72s ($17.62) at Middlesbrough. Consumers would be quite willing to buy for next year, but makers are shy of long contracts just now. Throughout the Black Country, it is a common complaint that normal supplies cannot be obtained. In the Barrow district, the demand is exceptionally strong, necessitating an increase in the number of furnaces in blast. The steady consumption of hematite iron is larger than for years past.

ISSUES REPORT

Crucible Steel Co. of America Makes Excellent Showing.

Pittsburgh, June 18.—The Crucible Steel Co. of America has issued its statement for nine months ending May 31, showing a remarkable development of the company's business for the period stated. The net profits for the nine months, exclusive of all depreciation, repairs and contingencies of all kinds were $2,385,872. The board of directors also declared a quarterly dividend of 1¾ per cent on the preferred stock of the company, payable June 29, to stockholders of record of June 19. The company's statement for the nine months' period is as follows:

Profits

Quarter ending:—	
November 30, 1911	$1,141,007.48
February 28, 1912	1,142,767.42
May 31, 1912	1,393,112.15
	$3,676,887.05
Deduct charges and appropriations for the following purposes, viz:—	
Depreciation and repairs	$1,073,639.21
Contingencies, corporation tax, and interest on bonds of subsidiary companies	217,374.95
	$1,291,014.16
Net profits for 9 months	$2,385,872.89

This statement compares with net profits for the nine months of the preceding year of $2,024,456, a gain of $261,424, while the statement for the preceding year shows a much smaller deduction for depreciation, repairs and contingent expenses. The statement just issued, it is said, is one of the best the company has been able to show since its organization.

Will Extend Railroad

The Cuyuna & Northern railroad has announced that it will extend its line in accordance with tonnage contracts entered into with the Cuyuna-Mille Lacs and Cuyuna-Duluth Iron companies. The decision, if carried through, will mark another step in the development of the Cuyuna range.

The extension will be about 5½ miles in length, starting from a point just west of Deerwood, Minn., running along the southerly edge of Serpent lake, through Ironton to the Cuyuna-Duluth Ironton townsite and then in a northwesterly direction to the Cuyuna-Mille Lacs properties. Surveyors are already at work and grading will probably be started as soon as a right of way is secured.

The Cuyuna-Mille Lacs Iron Co. is reported to have contracts calling for the hauling of ore by Sept. 1. It is also understood to have placed a contract with the Imperial Iron Works for mining equipment, comprising two 150 horsepower boilers, air compressor, hoist and shaft head crane.

TO BUILD OVENS

Pittsburgh Men Buy Out Coal and Coke Company.

The biggest coal deal of the year in Westmoreland county, Pa., was consummated recently, when Captain James Peters and Joseph C. Head, the owners of the Fort Palmer Coal & Coke Co., disposed of their holdings at Fort Palmer, in the Ligonier valley, to a party of Pittsburgh capitalists, who have formed a company known as the Westmoreland-Connellsville Coal & Coke Co., and who contemplate taking up the development of the field upon a large scale, the building of additional ovens, additional houses and a company store being among the plans entertained. In the neighborhood of 350 acres of coal, with a full equipped plant of 80 coke ovens, electric haulage, etc., together with a number of company houses, figure in the deal, the plant being one of the most complete in the district. Captain Peters and Mr. Head built the plant a few years ago, following their acquisition of a large tract of coal in the valley. The plant, under the superintendency of James F. Peters, has been improved and developed until today it is regarded as being a model from the standpoint of equipment. The plant at present has 80 ovens. The new owners intended increasing the number to 200 ovens, and to devote practically all their coal to coke-making.

Hearings in Louisville

The hearings of the Birmingham pig iron rate case, scheduled for some time in July, will not take place in the Alabama city, according to report, and it is said that the Interstate Commerce Commission, which will conduct the inquiry, has decided to have the hearings in Louisville, Ky. They will last about one week. Fully 100 persons, including one or two Interstate Commerce Commissioners, attorneys, freight traffic officials and rate experts of the railroads, and officials and attorneys of the plaintiffs, headed by the Sloss-Sheffield Steel & Iron Co., will attend the hearing. W. A. Wimbish, of Atlanta, is general counsel for the plaintiffs.

OBITUARIES

George D. Lincoln, 65 years old, who was well-known in the iron industry in New England, died suddenly at his office in Boston, recently.

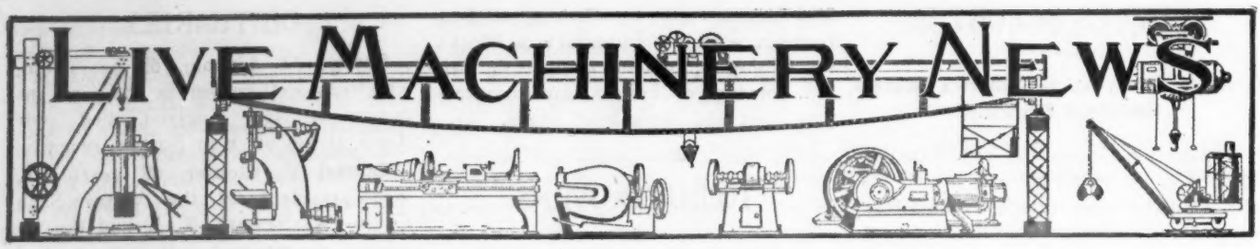
Samuel F. Clouser, 69 years old, vice president of the Victor Sash Chain Co., Newark, N. J., and the inventor of window sash devices, died at his home in Brooklyn, June 13, after a long illness. He was a native of Ohio.

Michael J. Ahern, 70 years of age, who, for 24 years, has been connected with the Carnegie Steel Co., and for 18 years superintendent of the mills at Thirty-fifth street and A. V. railroad, Pittsburgh, died at the family home in the East End, Pittsburgh, on June 11.

Charles Singleton Sweet, assistant to the president of the Pullman Co., Chicago, died recently at his residence in Oak Park. Mr. Sweet was born in 1848 at Mt. Sterling, Ill., was graduated from the old Chicago University and the Columbia law school, and entered the law offices of Ishman & Lincoln. When Robert T. Lincoln, who later became president of the Pullman Co., was appointed secretary of war, Mr. Sweet became his secretary. He had been in the service of the Pullman company 22 years.

Samuel P. Lewis, one of the most capable and expert rolling mill men in the country, died at his home, in Buffalo, last week, having been ill most of the time for the past year. Mr. Lewis was superintendent of the rail mills, the structural steel mills and the sheet steel piling mills of the Lackawanna Steel Co., having been head of the rail rolling department since 1905, and the other departments for over two years.

Mr. Lewis was born at Abadare, Wales, Nov. 17, 1856, and came to this country when a child. His father was one of the first iron makers to come to this country from Wales. Samuel Lewis started to work in the iron foundries and steel mills at an early age. His parents moved to Chicago, and he went to work for the Illinois Steel Co., remaining with the company for 30 years, and advancing through the various departments until he became superintendent. Shortly afterwards he went to Buffalo to superintend the making of the principal product of the Lackawanna plant. Mr. Lewis was not only a steel rail expert, but a capable general in the handling of large forces of men. He possessed a remarkably accurate knowledge of machinery and the intricacies of all the mill operations.



In New York, machinery dealers characterize the past week's business as being very satisfactory considering the lateness of the season and the temptation to defer buying until after the presidential election has been settled. Manufacturing interests continue to supply the bulk of business that is being enjoyed by the machine tool sellers. Practically nothing has been done by the railroads in this market for several weeks in the way of ordering shop equipment. It is expected that the General Electric Co. will soon be in the market for considerable equipment for the new factories now under contract, and a list of tools estimated to involve about $750,000 is said to be in course of preparation by the Boston & Maine railroad. The growing tendency to utilize water power for generating electricity for driving manufacturing plants affords a bright outlook for builders of this class of machinery.

In Pittsburgh, inquiries are increasing for machinery, and most of the makers are busy with estimates on contracts that are larger than have been averaged for a long time. In addition to this, the buying of small equipment continues in a satisfactory manner, and there have been some better prices obtained with a likelihood of still stronger prices being possible within the next few weeks. There is less idle capacity now in the Pittsburgh territory than for several months.

In Cleveland, general conditions remain about the same, although machine tool sellers report that the outlook is somewhat brighter than it was several weeks ago. There are no especially large inquiries out at present, but small business continues to make the aggregate fairly satisfactory.

In Cincinnati, the machinery market is rather quiet, although many of the sellers have enough business on their books to keep them busy for some time. There has been a good demand for lathes and several good orders for planers have been taken lately. Second hand machinery is selling in spurts, most of the recent orders coming from the south. The Big Four railway, it is reported, has been buying small lots of machine tools lately.

New Construction

The Vulcan Auto Corporation has begun the erection of an extensive automobile works at Wetaskiwin, Alta.

The Massillon Bridge Co., Massillon, O., is building a large, modern plant which is expected to be completed about the first of August.

The Turner Concrete Steel Co., Philadelphia, has obtained a permit for a four-story factory, 61 x 85 feet, at the northeast corner of Wood and Randolph streets, for Berks Bros. The cost will be $40,000.

The California Tool Works Co., California, Pa., will build an addition to its plant on property leased from the Vesta Coal Co. New machinery including a steam hammer is being installed.

The Standard Sheet Metal Mfg. Co., Washington, Pa., is taking bids on a one-story brick and steel manufacturing plant. Plans are being prepared by William G. Wilkens Co., of Pittsburgh.

The Russell Foundry & Machine Co., 51 Sixth street, Long Island City, N. Y., will erect a four-story foundry building, 75 x 83 feet, to cost $25,000. Machinery requirements are being considered.

Bids for the construction of the new addition to the Warner Elevator Co.'s plant on Spring Grove avenue, Cincinnati, will be let shortly. The new part will be 75 x 380 feet and of steel and concrete construction.

Notices have been sent out by the Germantown Tool Works stating that revised bids will be received on the construction of the seven buildings to be erected at Second and Duncannon streets, Philadelphia. The buildings are to be one and two stories, 30 x 100 feet, of reinforced concrete

The Central Iron & Coal Co., New York, and Holt, Ala., began to dismantle the furnace at Holt preparatory to building a furnace with daily capacity of 300 tons of iron, the cost reported to be $300,000; reports also state company will build another furnace.

The Holub-Deesha Co., 1799 First avenue, New York, contemplates establishing a manufacturing plant in Long Island City in the near future. The company has bought an extensive plant on Washington avenue, between Academy street and First avenue, and will erect a large modern factory.

The United States Envelope Sealing Co., Springfield, Mass., recently organized with Carl Davis of Springfield as president; J. M. Fuller, Springfield, secretary, and Fred C. Kidder, Sunderland, Mass., treasurer, has bought the Harrington mill site in Sunderland, and will erect a plant on the site of the mill, which was destroyed by fire several years ago. The company will manufacture a machine invented by Mr. Davis, and designed for the use of concerns maintaining large mailing lists. The concern occupies an office and shop at 33 Lyman street.

Thomas Black, of Winnipeg, is negotiating with the authorities of Fort William to secure concessions for the erection of a wire and nail plant to cost between $150,000 and $200,000 and give employment to about 200 men. An option on a site has been secured, but the details of the agreement to be made with the city have not yet been arranged.

W. C. Thomas, who is organizing a malleable iron foundry at Watertown, Wis., proposes to establish a plant consisting of the following buildings: Foundry, 70 x 200 feet, one melting furnace; annealing house, 70 x 100 feet, two furnaces; shipping room, 35 x 100 feet; hard rolling room, 35 x 70 feet; soft rolling room, 35 x 70 feet. Fifty men will be employed.

The Ford Motor Co., Detroit, has announced its intention to build a $200,000 assembling plant on a half block of ground recently purchased at the southwest corner of Forest Park boulevard and Sarah street, St. Louis. The ground has its rear on the Wabash tracks, and directly north of it is the new factory under course

of erection by the Dorris Motor Car Co., a St. Louis concern.

The Cleveland Welding Mfg. Co., Cleveland. has begun work on a new factory building on West 117th street that city. The Hunkin & Conkey Co., Cleveland, has the contract. The building will be of reinforced concrete construction, 75 x 400 feet, and about 100 tons of reinforcing steel has been ordered. The welding company advises that all additional equipment has been ordered. Capacity of the present plant will be trebled.

The General Aluminum & Brass Castings Co., in which Frank C. Root, formerly of the Aluminum Castings Co., is interested, will erect a large plant at the northwest corner of East Grand boulevard and St. Aubin avenue, Detroit, the plans for which have been prepared by George W. Graves. The structure will be of face brick and steel construction, being two stories in height at the corner, this portion having a width of 45 feet and length of 116 feet. The foundry and core room departments will occupy a one-story section 116 feet wide and 240 feet long. The offices will occupy the two-story part of the structure.

A subsidiary company of the New Era Transit Co. of New York and Buffalo is being formed in Winnipeg, where 1,000 acres have been purchased outside the city limits, on which will be erected an extensive car manufacturing plant. The output will be passenger and freight cars, mainly for suburban lines. Other plants will be constructed for the production of motor power. Surveyors and engineers are now on the ground where preliminary work has been begun. The cost of the plants, exclusive of the land at the outset will be $250,000, but considerably larger expenditures will afterwards be made. Employment will be given to about 2,500 men.

Plans for the warehouse and office building to be constructed by the Orr Iron Co. at Evansville, Ind., will be completed in a few days. The cost is estimated at $100,000. The buildings, four in number, will be erected on land bought by the company some time ago. It includes the old chair factory site on the half block between Fulton avenue and Walker streets and Ohio and Pennsylvania streets. The largest building will be five stories. Its dimensions will be 100 x 120 feet. On the first floor will be the general offices. The wholesale and retail departments will occupy the remaining four floors. The other three buildings will be one story. The dimensions of these will be 80 x 200, 40 x 200 and 30 x 200. They will be used to store heavy iron goods, such as railroad rails, blacksmith supplies and equipment, one being used as a general storage building. The buildings will be constructed of concrete and steel with skeleton construction. The plant will be modern in every respect.

Machine Tools

The Vietch Motor Mfg. Co., Cincinnati, O., has placed an order with a New York machine tool house for a number of motor-driven machines. The equipment will be installed in the company's western plant.

The D. Wilcox Mfg. Co., Mechanicsburg, Pa., is planning the enlargement of its plant to meet increase in business. A 2,500-pound steam hammer and a large electric welder are among the improvements contemplated.

The De Forest Sheet & Tin Plate Co., Niles, O., has placed an order with the National Roll & Foundry Co., of Pittsburgh, for five 28-inch finishing mills, and one 28-inch motor screw down mill with steel lifting tables.

Water Works

The city of Erie, Pa., has awarded contracts for improvements to its waterworks system on the lake front to the Henry Shenk Co., of Pittsburgh. The total improvements represent an expenditure of $500,000.

Bids will be received shortly for the installation of equipment in the pumping station of the new water works at Dayton, Tenn., work on which was recently begun. John A. Dutton is chairman of the committee in charge.

Power Plant Equipment

The Southport Light & Power Co., box 245, Southport, N. C., recently incorporated, will build and equip an electric plant, it is announced. H. P. O'Hagen, secretary and manager, will have charge of the work.

The South Side Electric & Mfg. Co., Pittsburgh, is installing two gas-driven units in its electric light plant to operate as one, and to be direct connected to two 150-kilowatt General Electric generators.

The erection of a large power plant, involving the installation of two boilers and an engine, is to be begun in the near future by Berea College, Berea, Ky. W. G. Frost is president of the institution.

The Leitchfield, Ky., Electric Light, Heat & Power Co., recently incorporated with $10,000 capital stock, is building a plant. W. T. McCaskey, W. D. Hodson and S. F. Seager are members of the company.

The Western New York & Pennsylvania Traction Co. is asking for bids on the construction of a power plant to be erected at Olean, N. Y. J. J. Miller, of Olean, will receive bids on the proposed plant, which is estimated to cost $250,000.

The Tennessee Power Co., which recently completed the construction of a hydro-electric plant at Parksville, Tenn., is beginning the construction of another plant on the Ocoee river, near Parksville. The company has taken over the electric light plant at Sweetwater, Tenn., and will install transformers and other equipment to enable current from Parksville to be distributed.

Miscellaneous

The city of Pittsburgh has awarded a contract to the C. N. Neeld Construction Co. for reinforced concrete arched bridge to span Everett street at Hoover street, 155 feet long and 50 feet high.

The Pennsylvania Casting & Machine Co., Pittsburgh, has purchased the property it has occupied under lease for many years, and is contemplating improvements. The property adjoins the old plant of the Riter-Conley Mfg. Co.

The American Car & Ship Hardware Co., New Castle, Pa., is considering plans for the extension of its main buildings and installing some additional machinery for increasing its capacity. Some improvements are now under way.

The Laurel Valley Coal Co., Humbert, Pa., expects to award a contract at an early date for two new mine openings near the present operations of the company, and will order electrical equipment for the new mines at a cost of about $50,000.

Contracts have been placed with the American Engineering Co., at Philadelphia, by the Republic Railway & Light Co., formerly the Shenango Valley Street Railway Co., for seven retort stokers to operate six 500-horsepower boilers in its new plant.

The Springfield Street Railway Co., Springfield, Mass., placed an order for one double equipment and one quadruple equipment for street car requirements, and the Erie Railroad Co. has closed for two quadruple equipments for electric motor service with the Westinghouse Electric & Mfg. Co.

New Buyers

(In order to assist the post office in delivering letters to new concerns, it is suggested that the names of incorporators be written in the lower left hand part of every envelope addressed to such new companies.)

The following manufacturing companies have filed articles of incorporation:—

Silvertone Talking Machine Co., St. Louis; $15,000; by Mark Silvertone, Chas. Aronberg, Minnie L. Lutter.

The Kansas City Aluminum Mfg. Co., Kansas City, Mo.; $10,000; by Guy M. Babst, Rudolph Best, E. H. Babst.

Kernodle-McDaniel Mfg. Co., Frankfort, Ind.; $10,000; to manufacture auto supplies; by directors, W. F. Kernodle, Maude Kernodle and Peter McDaniel.

Bradley-Winkler Coupler Co., West New York, N. J.; $50,000; to manufacture couplers; by P. R. Bradley, G. Winkler, J. V. McNeill, Guttenberg.

McKay Typewriter Co., Boston; $50,000; to manufacture typewriters; by president, G. F. McKay; treasurer, C. B. Edgerly, Derry, N. H.

Hinnant-Rierson Co., Wilson, N. C.; $25,000; to manufacture machinery; by S. B. Rierson, J. T. Hinnant and T. O. Hinnant.

Wright Pump & Fdy. Co., Kansas City, Mo.; $80,000; by Allie B. Wright, George W. Wright and G. H. Gwathmey.

Brooks Motor Car Co., Buffalo; $100,000; to manufacture automobiles, etc.; by Harmann G. Rechsteiner, George B. North, B. O. Karr, all of Buffalo.

The Abrams-Orton Mfg. Co., Wadsworth, O.; $18,000; to manufacture heating appliances; by John A. Abrams, H. L. Orton, William Bollich, C. R. Martin, Clarence Abrams.

The Indiana Machine & Wire Co., Indianapolis; $30,000; to manufacture fence machines; by directors, G. F. Whittington, F. H. Irwin and M. F. Cox.

The Mansfield Foundry & Mfg. Co., Mansfield, O.; $10,000; castings; by Harry L. Krumm, Oscar G. Jacob, Sarah E. Krumm, Helen M. Jacob, Arthur C. Jacob.

Oil Furnace & Engineering Co., Manhattan, New York City; $100,000; to manufacture oil burning engines, etc.; Robt. B. Floyd-Jones, 60 Liberty street, New York City; Harry F. C. Gamm, Rutherford, N. J.; Frederic Floyd-Jones, 51 Wall street, New York City.

National Lettergraph Co., Baltimore; $100,000; to manufacture typesetting machines; by Frederick H. Knapp, 1537 Friendsbury street; James Piper and H. Bannister Hall Jr.

Standard Meter Co., Brooklyn; $400,000; to manufacture water meters, etc.; by J. A. Ross, 87 Front street; John Hobran Jr., 358 Fifth street; R. J. Doyle, 135 Broadway, New York City.

Quigley Furnace & Foundry Co., Springfield, Mass.; $400,000; to manufacture furnaces; by president M. A. Danher, Natick; treasurer, W. P. Everts, Boston.

Economy Car Heating & Equipment Co., New York; $150,000; to manufacture car heating and railway appliances; by Randolph Catlin, Ira C. Ramsburg, Francis L. Durk, all of 177 Montague street, Brooklyn.

Wilmer Spikepuller Co. of Pittsburgh, Pittsburgh; $50,000; to manufacture spikepullers; by W. K. Wilmer, C. L. Wilmer, Oak Hill, W. Va.; Alexander Bain, Richmond, Va., and Thomas Treganown, Pittsburgh.

Maiwurn Aluminum Works, Erie, Pa.; $10,000; to manufacture and sell kitchen utensils and other articles made from aluminum, etc.; by Paul Maiwurn, Julius E. Curtze, Dale Maiwurn, all of Erie.

Penn Rivet Mfg. Co., Philadelphia; $150,000; to manufacture and sell rivets, and hardware specialties, etc.; by Alexander Seltzer, Michael Seltzer, Samuel Seltzer, Simon Wolf and Harry S. Jacobs, all of Philadelphia.

Fortune Stove Co., Reading, Pa.; $10,000; to manufacture and sell iron and steel, or both, etc.; by William Thompson, Reading, Pa.; Fitz Charles Greene, 630 Lincoln drive, Philadelphia; George W. Hall, Reading.

United Electric Supply Co., Manhattan, New York City; $100,000; to manufacture mechanical and electrical appliances; by Anselm P. Anderson, 32 Liberty street; Oscar B. Frazer, 34 Nassau street; John G. Clarke, 32 Nassau street, all of New York City.

The Cincinnati Locomotive & Car Works, Cincinnati; $25,000; to manufacture and repair locomotives, cars, machinery and general railway equipment; by John Glenn, Ludlow, O.; William Edwards and Daniel Goldstein, of Cincinnati.

The O. & H. Tire Co., East Palestine, O.; $50,000; to manufacture vehicles and rubber mechanical goods; by J. A. Oatsdean, O. L. Shumate, C. A. Oatsdean, C. F. Hanable, A. S. Mauk.

General Industrial

The Flying Machine Mfg. Co., Chicago, has been dissolved.

The Vincennes, Ind., Bridge Co. has the contract for the erection of three bridges near Jasper, Ind.

The Attica, Ind., Bridge Co. will erect two bridges in Clark county, Ind.

The Pittsburgh Steel Specialties Co., Pittsburgh, has filed a decree of dissolution.

The American Piston Co., Indianapolis, Ind., has increased its capital from $30,000 to $50,000.

The Browning Mfg. Co., Cleveland, has reduced its capital from $200,000 to $2,000.

The Bessemer Gas Engine Co., Grove City, Pa., has increased its capital from $400,000 to $1,000,000.

The Corry Metal Furniture Co., Corry, Pa., has increased its indebtedness from nothing to $45,000.

A charter has been granted at Harrisburg, Pa., for the Bessemer Refining Co., Titusville, capital $250,000.

Notice has been filed by the Westmoreland-Connellsville Coal & Coke Co., of Pittsburgh, of the creation of an indebtedness of $425,000.

The Marion Motor Car Co., Indianapolis, Ind., advises that it is not contemplating any improvements at this time.

The Erie Forge Co., Erie, Pa., has increased its capital from $150,000 to $1,000,000, and increased its indebtedness from $125,000 to $300,000.

The Louisville & Nashville Railroad Co. advises that it is not at present contemplating the construction of shops at Irvine, Ky.

The Vacuum Massager Mfg. Co., New York, advises that it will not do any extensive building or installing of equipment at present.

Following the announcement of the abandonment of the valley mill of the Republic Iron & Steel Co., at Youngstown, O., came a report that

the Lake Shore lines were negotiating for the property for shop and yard purposes.

The Paris Auto Starter Co., Paris, Ill., has changed its name to the Paris Electric Starter Co., and increased its capital from $10,000 to $100,000.

The erection of coking ovens and the construction of a water plant are plans of the Elkhorn Consolidated Coal & Coke Co., which has properties at Pikeville, Ky.

The Milwaukee Scale & Register Co. has been organized at Milwaukee, Wis., and incorporated for $50,000. The promoters are H. A. Zastrow, A. J. Bayley and Millie Zastrow.

Peter Wendel, manufacturer of wagons, 142 Waverly avenue, Newark, N. J., has plans for a brick factory building, to be erected at 179-181 Badger avenue, that city.

The Orange Iron Works, Houston, Tex., has secured an order for 25 more logging cars in addition to 50 just completed and delivered for the American Lumber Co., Merryville, La.

The Dilworth Paper Co. plant, north of New Castle, Pa., is to be torn down and rebuilt and completely equipped. New machinery including boilers and beading machines will be added.

The W. R. Jones Glass Co., Morgantown, W. Va., will build additional buildings of steel and cement, and will install glass blowing machines in connection with its present factory equipment.

The Joliet Bridge Co., of Joliet, Ill., has the contract for a bridge to be erected by McNairy county, near Selmer, Tenn., and it is stated that similar contracts will be let for other bridges in the near future.

The A. L. Greenberg Iron Co., of Terre Haute, Ind., has filed notice with the secretary of state of an increase in its capital stock from $40,000 to $100,000. Jacob R. Finkelstein is president of the organization.

The citizens of Sydney, N. S., have voted in favor of giving a bonus of $1,000,000 to the British Canadian Ship Building & Dock Co., which proposes to establish a ship building plant and dry dock there at a cost of $6,000,000.

Charles M. Schwab has purchased the site of the old plant of the New Jersey Zinc Co., at South Bethlehem, Pa., which the company abandoned several months ago. It is understood that the price was more than $250,000.

Receivers have been appointed for the Woodstock Iron & Steel Corporation, Anniston, Ala. The company has extensive properties. The action was taken by the Standard Trust Co., which holds mortgage bonds amounting to about $1,000,000.

Adolph Fenstewald and George G. Epsteen, both of Detroit, have purchased a large site from the Underwriters' Realty Co., of Louisville, and are figuring on the erection of a large building there. It will probably be used for stores, a theater and offices.

The Boston-Virginia Transportation Co. is the name of the new concern which is building four first-class steel steamships to be employed in the coal-carrying trade. The company is capitalized at $1,400,000, and its first mortgage bonds are being offered to the public.

The Alberton Iron Works, Alberton, Pa., is negotiating for the properties and plant of the National Foundry Co., Connellsville, which has been idle for a number of years. It is understood the new owners intend to operate the plant for cast iron products.

Watertown, Wis., capital is being interested by W. R. Thomas in a $60,000 corporation to be organized for the purpose of establishing a malleable iron plant at Watertown. Definite plans will be made known when the stock subscriptions reach a substantial amount.

The Northern Electric Co. has been organized at Milwaukee, Wis., with a capital of $5,000. William C. Schenck, Thomas J. Perry and August E. Manthey are the incorporators. Mr. Manthey is president of the Manthey-Sieker Co., 784-790 Thirtieth street, Milwaukee, machinist.

The Eberly & Orris Co., Mechanicsburg, Pa., manufacturer of wheels and spokes, has just completed an addition to its plant, which will be used exclusively for the manufacture of automobile wheels. New machinery of the latest type is being installed.

Plans for the new building of the Cincinnati & Suburban Bell Telephone Co., Cincinnati, have been changed, making it a 12-story structure instead of 10 stories, as previously announced. The dimensions of the building will be 83 x 120 feet, and will be of steel construction. Architect Harry Hake, of Cincinnati, is preparing the plans.

The Morgan Construction Co. is to build a garage, steel and pattern storage, building, at 15 Carbon street, Worcester, Mass, in the rear of its Lincoln street plant. The new building will be of brick, steel and concrete construction, 49 x 67 feet, and two stories. It will cost $10,000.

The Vulcan Iron Mfg. Co., of Fond du Lac, Wis., has been awarded the contract for constructing and erecting a 90-foot steel stack for the Helmer Milling Co. It is 44 inches in diameter, 90 feet high and of the self-supporting type. The plate is 5/16-inch material.

The Tennessee Exploration Co., with headquarters at Knoxville, Tenn., is considering the installation of a large mill for handling zinc ores at Mascot, Tenn. The concern is connected with the American Zinc Co. Power will be secured from a hydro-electric plant to be built on Holston river, it is stated.

The Sheboygan Machine Co., organized recently at Sheboygan, Wis., has leased the former Kohler-Hayssen works at Sheboygan and is now manufacturing gasoline engines and pumps. The promoters were formerly officials and superintendents of the Falls Machine Co., of Sheboygan Falls, Wis., large builder of automobile and truck motors.

Following the inspection of the Pennsylvania terminals at Louisville, including the property of the Louisville Bridge Co., which is a subsidiary corporation, it is assumed that plans for the reconstruction of the bridge, which has been under consideration for some time, will be announced. James McCrea, president of the system, looked over the situation in Louisville last week.

The George W. Johnson Mfg. Co., of Kansas City, Mo., maker of iron and steel fire escapes and fireproof doors for warehouses and manufacturing plants, has occupied a building at 1210 South Eighth street, St. Louis, which it bought recently, and will remove to St. Louis. The building is two stories, 50 x 100 feet, modern and thoroughly equipped.

Martin Bros., proprietors of an iron foundry at Belleville, Ill., are in communication with Paragould, Ark., business men relative to establishing a foundry in the latter city. Inducements in the way of a free site will probably be offered the firm, and if other conditions prove satisfactory, the company states it will put in a plant at Paragould.

The H. H. Snyder Co., of Louisville, Ky., has been awarded the contract for the erection of the reinforced concrete frame of the office building of the Great Southern Fire Insurance Co. in that city. Joseph & Joseph, of Louisville, are the architects, and will let the contracts for the heating plant and the three elevators which are to be installed.

The Suburban Equipment Co., New York, advises that it has been organized to handle sales of the Sharp rotary ash receiver, which is an attachment for steam, water and hot air furnaces; also gas and gasoline engines and mechanical appliances, such

as pumps, water systems, etc., for suburban service. Owing to the nature of the organization it is doubtful if any building will be required.

The Stewart Iron Works Co., Cincinnati, O., advises it is unable at this time to give out definite information regarding plans for remodeling its plant at Covington, Ky., recently damaged by fire. The new buildings, it is announced, will be large enough to enable the company to double capacity. Machinery to go into the new buildings will be of special design, built in the company's shops.

The development of 22,000 acres of coal lands near Chattanooga, Tenn., by interests associated with the Durham Coal & Iron Co., Chattanooga, and the Chattanooga Estates Co., of the same city, is reported as a prospective development. Coking ovens will be built and the output of coal increased to 1,000,000 tons a year. C. H. Smith, of the Durham Coal & Iron Co., is directly interested in the movement.

Mackenzie, Mann & Co., Ltd., call for tenders to be received at their offices at Vancouver, B. C., up to July 8, for the substructures and superstructures of ten bridges over the Fraser, Thompson and North Thompson rivers, on the section of the Canadian Northern Railway, between Port Mann and the Yellowhead Pass, B. C. Tenders are to include any or all portions of the constructions, or the delivery of metal-work only.

Articles of incorporation have been filed by the Rothbert Steel & Iron Co. with a capital of $5,000,000. The company is said to be planning the building of a works at Denver or Pueblo, Colo., for the manufacture of a special steel. The process was discovered by E. H. Rothbert, a metallurgist, who is operating a plant in Leavenworth, Wash. The process treats magnetite ores. The incorporators are D. E. Rowe, H. L. Hamilton and R. H. Tatlow Jr.

The Pressed Steel Truck Co., of Pittsburgh, has been organized under the laws of West Virginia, with F. G. Follansbee, W. U. Follansbee, George L. Follansbee, John Follansbee and C. J. Wilson as organizers, and is considering the proposition of building a plant for the manufacture of pressed steel trucks under patents held by C. J. Wilson. C. J. Wilson, the Commonwealth building, Pittsburgh, is the active head of the new concern.

Development of the Tennessee Timber, Coal & Iron Co. properties at and surrounding Nemo, Tenn., consisting of 25,000 acres of land acquired from the Harriman Land Co., is in prospect. The necessary buildings have been erected and machinery is being installed in the saw mill. Grading of railroad leading from Nemo into the body of land has been completed and track-laying will begin as soon as the bridge across Emory river is finished. The general offices of the company are now in Harriman, Tenn.

The W. Robertson Machine & Foundry Co., 32 Greenwood place, Buffalo, recently organized with a capital of $15,000, will manufacture machine tool specialties, including a complete line of power hack saws for all kinds of metal cutting, special drilling machines and will also manufacture to order gray iron pistons with wall and thickness of metals cast within 0.005 of finished size. W. Robinson, formerly with the Frontier Iron Works, Buffalo, was elected president and manager of the company.

A contract has been closed by the National Malleable Iron Co., at Sharon, Pa., with the Republic Railway & Light Co., the holding company for the Mahoning & Shenango Railway & Light Co., for supplying electric power to the Sharon corporation. Other deals whereby several other large plants in Sharon will obtain current from the local company are pending. The increase in power required under the contract will be supplied from the central power station now in course of erection at Lowellville, O.

The Quigley Furnace & Foundry Co., 50 Church street, New York City, recently incorporated, is operating a 50-ton foundry at Springfield, Mass., and is manufacturing a full line of annealing, heating, forging and melting furnaces, soaking pits, core and mold drying ovens, open-hearth steel, malleable and gray iron melting, dross, reducing, copper refining furnaces, etc. W. H. Quigley, formerly with the Rockwell Furnace Co., 26 Cortlandt street, New York City, is vice president and general manager of the new company.

The Globe Automatic Sprinkler Co. has filed a charter at Columbus, O., giving its capitalization at $1,000,000 and will move its manufacturing business from St. Paul, Minn., to Cincinnati. It will employ 500 men. The company has been operating as a sales concern in Cincinnati. The present Globe company is a $100,000 corporation, of which A. B. Gould is president. He will also be president of the new company, which will take over the business of the present corporation. A committee is now seeking a building suitable for manufacturing purposes. The capital of the new company is to be divided into $500,000 7 per cent cumulative preferred stock and $500,000 common shares. The incorporators are J. G. Schmidlapp, R. A. Koehler, A. B. Gould, Ben B. Dale, Edward A. Senior and R. F. Balke.

J. A. McCreary, formerly superintendent of the W. J. Rainey car plant at Mt. Braddock, Pa., has contracted for the delivery of a number of patent coke oven doors, of which he is the inventor. His largest order, that of 180 doors for the W. Harry Brown operations, near Brownsville, has been added to. The order of 180 has been partially delivered. The Tower-Hill-Connellsville Coke Co. has contracted for 25 oven doors. The patent was granted a few years ago. Mr. McCreary and T. J. Mitchell are joint owners.

The C. L. Gray Construction Co., with offices in the Victoria building, St. Louis, through its attorneys, has filed a petition in bankruptcy in the United States District Court at Danville, Ill. The liabilities are said to be $1,400,000 and the estimated assets are $450,000. Thirty banks in St. Louis and in East St. Louis are creditors, with amounts ranging from $1,500 to $76,000. Forty-two St. Louis mercantile houses, doctors, attorneys and grocers are creditors for amounts of less than $1,000 each. The construction company, which has erected many buildings in St. Louis and New York City, suspended operations more than a year ago. The company was organized in 1898.

Trade Notes

The Dodge Mfg. Co., Mishawaka, Ind., opened a branch office at 21 Murray street, New York, June 18.

The Taylor Iron & Steel Co., of High Bridge, N. J., has opened offices in the Oliver building, Pittsburgh, for the Pittsburgh district.

James Pierpont & Co., of Philadelphia, has opened Pittsburgh offices in the Oliver building to better care for the company's business in that territory.

Fires

The plant of the Diamond Mfg. Co., Detroit, Mich., was badly damaged by fire recently, the loss being about $150,000. The company manufactures automobile parts and plumbers' supplies. The plant of the Detroit Copper & Brass Co., which adjoins the Diamond company, was slightly damaged.